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THE JOURNAL

OF THE

American Medical Association

Subscription, $7.00 | PUBLISHED WEEKLY | Single Copies, 25 Cents

VOLUME 103, No. 13 | 535 North Dearborn Street, CHICAGO, ILL. | SEPTEMBER 29, 1934

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Entered as Second-Class Matter, June 25, 1885, at the Postoffice at Chicago, Ill., under Act of March 3, 1879. Acceptance for mailing at special rate of postage provided for in Sec. 1103, Act of Oct. 3, 1917, authorized on June 14, 1918.

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The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 103, NO. 13 CHICAGO, ILLINOIS SEPTEMBER 29, 1934

THE CANCER PROBLEM TODAY

CHAIRMAN'S ADDRESS

WILLIAM CARPENTER MACCARTY, M.D.

ROCHESTER, MINN.

From time to time for many centuries it has been the duty of observers to appraise the status of the problem of cancer and point out means of promoting its solution. Each stresses quite naturally the field in which he has been most active. It would be unusual to find any one who could do justice to all phases with perfect equanimity. I shall not take the time or detract from my specific purpose by presenting a historical review of existing knowledge; this has been done frequently and is to be found at easily available sources.

The cancer problem, as I see it, has five distinct parts, which I shall enumerate in their probable order of practical importance:

1. The recognition or diagnosis of this disease or complex of diseases by laymen, general physicians, general pathologists, surgical pathologists, surgeons, and teachers of medicine. Each has its own limitations.

2. The statistical frequency of the disease and its relation to human welfare and possibly to that of other forms of life.

3. The application of empirical methods of treatment, there being, as yet, no known infallible specific method.

4. The education of active members of the medical profession, medical students and all those who are or might be affected by this disease.

5. Endowment and execution of pure scientific experimental research which has for its function the study of the biologic nature of the disease.

For fear of being considered unappreciative of pure experimental research, which I have placed fifth in importance, may I say that I have participated in experimental research most of my life and am somewhat familiar with what is being done throughout the civilized world. There should be nothing but the highest praise for the experimenters, their work and their financial benefactors. They have contributed much to general knowledge; their activities involve diverse, painstaking and time-consuming methods of approach. I know of no branch of scientific knowledge or procedure that has not contributed positively or negatively to the study of this problem.

The search for the distribution of cancer in all forms of life has revealed much to suggest that it is a biologic phenomenon not dependent on any single specific factor and that it is a cellular defensive reaction to a local abnormal environment which is not efficiently eliminated by multicellular organization. The wide range of the disease suggests further that the many very different specific causes vary perhaps with species, habits, geography, organs, tissues and portals of entry. Although possibly quite different, they produce tissue destruction with consequent attempts at regeneration, during the partial failure of which the cells take on a migratory and individualistic phase which eventually destroys the whole organism of which they have been a part. This is of course not an unheard of phenomenon of life and is not characteristic alone of cells but of much larger units such as human beings.

The pure experimentalists have confirmed the old empirical ideas that chronic irritation and heredity play parts although the mechanism of heredity may still be under discussion. Despite this progress, a specific cause of human cancer has not been discovered; no means of producing immunity has been established; there is no means of making the diagnosis early other than with a microscope; there is no specific method of treatment and no immediate practical means of preventing the disease through knowledge of genetics. In my opinion one of their greatest functions is censorship of the many "cancer cures" that too readily gain publicity; I have seen excellent physicians and surgeons become prematurely enthusiastic and sincerely advocate immature spectacular ideas relative to the cause, diagnosis and treatment of cancer.

Despite the things the pure researchers have not done I still believe their experiments should be continued, increased, and even more abundantly endowed; they will undoubtedly discover the true biologic nature of this disease, which is now one of the greatest destroyers of mankind.

As to the recognition or diagnosis of cancer: The layman cannot be expected to differentiate it from other diseases but he can and should be taught the specific things that might arouse enough suspicion to send him to a properly trained physician. The general physician also cannot be expected to recognize it in its early stages as he is being educated today. The general pathologist who spends his time performing autopsies on those dead of cancer cannot be expected to recognize the early stages of the disease, because the early stages do not kill and rarely come to autopsy; he rarely, therefore, has the opportunity to see them.

Thus, each of these diagnosticians has his limitations dependent on his opportunity actually to see the disease in its early stages. So far as seeing early cancers is concerned, dermatologists, endoscopists, roentgenologists, surgeons and surgical pathologists are the only physicians who have this opportunity. Perhaps this sounds like professional heresy, but the following fig-

Read before the Section on Pathology and Physiology at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 13, 1934.

ures substantiate the statement. I have recently studied more than 1,200 cancers the size of a quarter (24 mm.) or smaller found surgically in the breast, stomach and large intestine. None of these gave positive characteristic signs or symptoms of cancer but all gave signs and symptoms of conditions that are sometimes, but not always, associated with cancer. There are only two reasons why these relatively small cancers were discovered: They were suspected in spite of the absence of textbook signs and symptoms and the patients were explored endoscopically, roentgenologically, surgically and microscopically while they were alive. They therefore received immediate complete and thorough examinations, an attempt being made to rule out cancer before it reached the stages of clinical recognition.

What constitutes a small or early cancer might be a question. I have arbitrarily chosen 2.5 cm. in diameter, because this is much smaller than the average size of operable cancers in the organs I have mentioned. In a series of 7,750 surgically removed cancers that I have measured, the average diameters were for the breast 3.2 cm., the stomach 6.1 cm., the rectum, rectosigmoid and sigmoid 5.7 cm., and the rest of the large intestine 6.9 cm. Such averages do not represent the average size of cancers as they are actually being recognized by general physicians, because only 50 per cent of all cancers of the breast, 25 per cent of the stomach, 58 per cent of the large intestine, 65 per cent of the body of the uterus, 85 per cent of the cervix, and 75 per cent of the lip are operable when first seen by the surgeon. These percentages of operability suggest that the disease is not early when discovered by the medical profession as a whole. Of those operable, 62 per cent of the cancers of the breast, 53 per cent of the stomach and 38 per cent of the large intestine have glandular involvement. In general it may be said that cancer is certainly not being diagnosed early despite the repeated pleas of surgeons and the campaigns of the American Medical Association, the American College of Surgeons and the American Society for the Control of Cancer, each of which has thoroughly propagandized the country from end to end, spent thousands of dollars, and has been generously assisted and supported by a very willing press. I have not the slightest doubt, however, that their efforts have rendered a most valuable service so far as popular education is concerned, but the job is far from finished; the problem is not yet solved so far as early diagnosis and early treatment are concerned.

The second part of the problem, namely, the statistical frequency of the disease, has been abundantly studied. The figures, although perhaps not absolutely accurate, are sufficiently correct to awaken interest and suggest serious consideration. Cancer is a very common disease. Whether 100,000 or 150,000 die this year or next is very tragic, but nothing can be done about those who are dead or those who are going to die next year. The latter might be made comfortable but they will not be cured. The important group to consider is the one now unconsciously waiting to die five, ten and fifteen years hence. Cancer does not have a life history of just a few months or one year; it is a disease that usually takes several years to run its full course. Those who have studied the clinical histories of a large series of cancer patients must be aware of the fact that most of them have a longer story than appears on a superficially taken history. Despite the fact that this disease does occasionally slip up on its possessor unawares, this is far from being the general rule. I myself am not interested in the 100,000 or 150,000 that will die this year; I am certain their cancers are much larger than the average sizes I happen to know are being operated on. It is the patient with a lesion smaller than a quarter that I think the general practitioner must consider seriously if he is to continue his duty in relation to the problem.

The third part—the application of empirical methods of treatment—has a history that is a medical epic equal in greatness to any social epic in any land. Time forbids its complete review; one must be satisfied with a mere suggestion. By way of illustration, the history of surgery may be considered in its relation to the treatment of gastric cancer, which happens to be the most frequent form. In view of the fact that pure medical treatment of cancer has always had a 100 per cent mortality preceded by suffering and slow death, it was the object of early surgeons to relieve the suffering first by some sort of gastro-enterostomy or pyloroplastic operation and later, when their technic became perfected, attempt the removal of the disease itself. Wölffler in 1881 reported his technic for gastro-enterostomy and during the same year Billroth did his first successful gastric resection for cancer. It must be remembered that little was then known of the cause of infection and how to prevent it. Pasteur had just isolated the streptococcus and staphylococcus, and although empirical antisepsis had been practiced by Lister, Kirchenmeister, Lemaire, de Morgan and others, abdominal surgical exploration was not possible until the development of asepsis, which awaited the further work of Pasteur, Koch and others. It may be said that the developmental technical period was from 1880 to about 1910, a period of thirty years. Operative mortality for removal of gastic cancer dropped from 100 per cent in 1880 to 9.5 per cent and less in 1906, at which time gastric operations became much more frequent and time was sufficiently long for a study of results. W. J. Mayo, as far back as 1910, reported 20 per cent of his eighty-five patients who had had gastric resections for cancer alive and well after four years, two alive over eight years, two over six years, and two over five years. This was certainly better than letting them die of slow starvation, anemia and metastasis.

From 1910 both the immediate risk of operation and the postoperative results have continued to improve with resultant greater frequency of diagnostic exploration and therapeutic resection, both of which have provided abundant opportunity for the surgeon, endoscopist, roentgenologist and surgical pathologist to see cancers long before they have had a chance to make themselves apparent by textbook signs and symptoms of cancer.

To this review of the surgeons' efforts must be added the more recent and shorter history of the application of x-rays, which have a very definite place in successful diagnosis, therapy and alleviation. While no one would be bold enough to suggest that the empirical methods are perfect or 100 per cent efficient, fairmindedness must admit their excellent results despite the fact that they have not been given half the chance by the profession that their merits deserve. It is quite obvious to those who follow results that the chances of effecting good results are indirectly proportional to the size of the cancers when treated. In spite of all scientific research there has been no method of treatment that

has given anything that even approaches the results of surgeons and radiologists, each in his proper place. Blame cannot be placed on surgeons, roentgenologists, radiologists, popular cancer propagandists, general physicians, laymen or pure scientists for the slowness of progress; the fault does not lie in their direction but rather in the inherent sluggishness of educational methods, which reminds me of one of my favorite quotations: "The longer I teach the more I am impressed with the infinite capacity of the human mind to resist the introduction of knowledge" (Lounsbury).

This leads me to the fourth and last part which I shall consider—that one which has to do with the education of the medical profession itself and future members of the profession. The layman may be dismissed at once. I believe there are probably very few individuals in the United States over 21 years of age who have not heard about cancer, thanks to the campaigns that have been conducted by the profession and the lay press. On the other hand, I am not so certain that the organized medical educational system has done all it can do. Having been for years intimately associated with medical students, recent medical graduates and practicing physicians from schools from all parts of this country and abroad, I must confess that I am chagrined at the lack of practical knowledge of the early stages of cancer and their relation to other diseases. Only cancer in its late stages is being taught. May I bring my opinion to a point abruptly by saying that no teacher of medicine and no teacher of pathology can teach the early stages of cancer by selecting for teaching purposes clinically recognizable cases of cancer and the dead. This can be done no more than the circumstances that lead to war can be taught on the battle field.

Cancer is a biologic disease and its living phases, including its initial phase, must be brought to medical students and practicing physicians. What modern ornithologist would be satisfied to teach the life history of birds and their habits from stuffed dry skins, valuable as they may be as records? So far as cancer is concerned, why should it be taught only in the clinical wards and at autopsy tables when the surgeons are offering opportunities to see cancer long before it gives recognizable and characteristic signs and symptoms? Bronchitis is taught as something to be immediately differentiated from early tuberculosis; physicians do not wait for the signs and symptoms of consumption, a term that has been relegated to the past, just as the term cancer will be in the very near future.

Cancer is, in my opinion, a simple problem, although the various specific causes may never be known and no specific cure ever found. It is a problem of health in general, external and internal cleanliness, and heredity. It is, so far as the profession is concerned, a problem of prevention, which means early recognition and treatment of things which frequently end in cancer. It is a disease that is the result of disease.

Now that philanthropists have endowed medical schools, hospitals and research institutions, it is time for some one to endow a system of teaching for general practitioners. This most important member of the profession is the one who sees but does not recognize small cancers. He must have the knowledge brought to him directly by clinics held in his immediate vicinity. He is too busy to read special journals on cancer; he has no time to attend distant special meetings. If famous surgeons and diagnosticians come to him directly they are—often unjustly—criticised; they are accused of soliciting practice. The medical profession has always been altruistic; it has always given more than it received; severe and unfair criticism exists nevertheless.

Some well trained individual or some group must be endowed to travel and teach without expectation of financial compensation from practice. The method of education of general practitioners today is similar to the teaching of the proprietary medical schools, which have disappeared through financial endowment. The change can be made at very little cost; by this method the almost complete eradication of this scourge can occur in the next thirty to fifty years.

I have spoken very plainly because I have seen too many tragedies that might have been avoided. At present these tragedies are no one's fault. No one is to blame. The problem today is one of education, rid of the criticism that of necessity occurs in any form of proprietary teaching. I believe very firmly that there must be some form of endowed education carried directly to doctors. This is even more important than the establishment of institutes of research, which have certainly produced tremendous progress and justified their existence. Just as long as medical education of the practicing profession has possible monetary reward, just so long will it be handicapped and just so long will the next generation reach middle life with hopeless cancers.

There are enough known facts if properly and extensively applied to solve the cancer problem. Early cancers can be found, are being found, and are being removed safely. As a certain satirist (Kraus) once said, speaking of the cultures of his particular country, "The level of culture has risen tremendously in the past fifty years, but it is a pity nobody stands on that level." The level of medical progress has risen tremendously, but it is a pity the whole profession has not reached that level for lack of financial resources in a country as rich as the United States.

In conclusion, may I suggest, should such an endowment arise, that it be a memorial to the late Dr. William Henry Welch, who, in my opinion, has done more for human welfare and happiness than any one else in recent civilization. May I suggest further that it be applied in the ethical spirit of the American Medical Association, which represents the whole medical profession in its relation to all the people.

Epidemic Dropsy.—Undoubtedly the most important and the commonest method of depriving the body of protein . . . is through a prolonged or excessive reduction of protein in the diet. Though it has only recently been discovered, as I shall point out, that there is a close connection between protein starvation and the formation of edema, the occurrence of dropsy in states of advanced undernutrition has attracted attention for centuries. It has been described as occurring in epidemics, and for this reason has been called "epidemic dropsy." The descriptive terms used in the literature serve in themselves to indicate the conditions under which it was likely to occur; for we find it referred to as "war edema," "prison dropsy," "hunger swelling" and "deficiency edema." There are interesting accounts of the dropsy which was widespread in the French Army during the Wars of the Sixteenth Century and which was common in the armies of Napoleon. The interesting observation was also made that the swelling was much greater in the soldiers on march or on duty than in those too sick to move about. Many children confined in Paris during the Siege of 1870-71 became edematous, and in the great famines of India and Russia the people have been described as "swollen with hunger."—Longcope, W. T.: The Importance of Disturbances in Nutrition in Edematous States, *New England J. Med.* **210**:1244 (June 14) 1934.

THE IMMUNIZATION OF SCHOOL CHILDREN AGAINST WHOOPING COUGH

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During the past two school years, prophylactic injections of whooping cough vaccine have been given to large groups of primary grade and preschool children in the Fresno public schools.

The vaccine used was the undenatured antigen of Haemophilus pertussis described by Krueger, Nichols and Frawley.[1] The method consists essentially of disrupting living bacterial cells by mechanical means and obtaining the endocellular elements by ultrafiltration. Recently isolated smooth strains of Haemophilus pertussis are grown on Bordet's medium enriched with human blood. The cells are harvested in buffered isotonic solution, thoroughly washed to remove metabolites, and mechanically disrupted in a ball mill. The resultant suspension is subjected to ultrafiltration through acetic collodion membranes whereby all intact cells and large particles are retained, while material in molecular or colloidal solution passes through. The water-clear filtrate contains the antigen. Micro-Kjehdahl determinations are made to determine the nitrogen content of this antigen solution.

The advantages that this vaccine possesses are the following:

1. It is made from the virulent phase I organisms, which were described by Leslie and Gardner[2] as the strain of high antigenic activity.

Controls and Children Vaccinated Against Whooping Cough

505 children received 8 cc. lysed pertussis vaccine during November 1933

Since then 80 children have been exposed to whooping cough
- 49 children developed no symptoms
  - Home exposures 16
  - School exposures 33
- 31 children developed symptoms

Controls: 174 nonvaccinated children who had whooping cough during same period

Duration of paroxysmal stage	Children Who Developed Symptoms	Controls
Less than 1 week	25	9
1 to 2 weeks	5	49
2 weeks or more	1	116
	31	174

2. The antigenic activity of the vaccine is preserved by this method. It is now generally conceded that bacterial antigens are altered by physical agents such as heat or chemicals and lose their relationship in whole or in part to the organism from which they originated. This conception is founded on the work of Anson and Mirsky on the denaturation of proteins and forms the basis of this method wherein no heat or chemicals are used for devitalization.

3. There is no reaction following its use because the bulk of the bacterial protein has been removed with the killed bodies of the bacteria. Also the toxic filtrate has been eliminated by the thorough washing.

4. There is no danger of sensitization of the patient by foreign serum adsorbed on the surface of the bacterial cells, as human blood is used in place of animal blood to enrich the medium.

In January 1933, injections of this antigen for immunization purposes were given to the first group[3] of school children. Only a small amount was given at this time, the total for each child being 2.5 cc. Many of this group, which consisted of 345 children, were subsequently exposed to whooping cough. The results were encouraging but not entirely satisfactory. During the following school year, in November 1933, larger injections were given to 505 children.[4] Each child received 8 cc. in four weekly injections of 2 cc. each. Follow up studies in this group have given evidence of much better protection. Since vaccination, eighty children in this group have been intimately exposed to whooping cough. In forty-nine no symptoms developed; sixteen of these were exposed at home and thirty-three at school. In thirty-one children whooping cough did develop. The attack in these cases was particularly mild; twenty-five had a paroxysmal stage of less than one week's duration, five, of from one to two weeks' duration and one of two weeks or more.

The extent of the protection given by prophylactic vaccination can be visualized when these cases are compared with cases that occurred in nonvaccinated children from the same homes and classrooms. One hundred and seventy-four unselected cases of whooping cough seen in nonvaccinated children during the period of this study were taken as controls. In this control group the paroxysmal stage lasted less than one week in nine cases, from one to two weeks in forty-nine cases and two weeks or more in 116 cases.

COMMENT

A study of the results obtained in this group of kindergarten and preschool children indicates that definite protection against whooping cough was given by prophylactic vaccination with pertussis antigen. There was no reaction following injections in nonimmune children.

Considerable local reaction does occur in the case of children who have recently had whooping cough. This is probably an allergic phenomenon[5] and represents a reaction between the specific antibodies in the tissue and serum of the individual and the antigen. This hypersensitivity is gradually lost and after a few years no greater local reaction is produced than in the case of children who have never had whooping cough.

Because of the absence of reactions following injections of antigen solution in nonimmune children, it is possible to carry out a vaccination program on large groups of children entering school life. Such children are particularly in need of prophylactic vaccination, as they are at this time most likely to be thrown into contact with whooping cough. There is not much danger of younger children being exposed unless the infection is carried home from school by the older members of the family. In a recent health survey of preschool children in Fresno County[6] it was found that 70 per cent of the children ready to enter the public schools had not yet had whooping cough. Routine vaccination of kindergarten children would remove the danger of

Read before the Section on Pediatrics at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 15, 1934.

1. Krueger, A. P.; Nichols, V. C., and Frawley, J. M.: Preparation of an Active Undenatured Antigen from Haemophilus Pertussis, Proc. Soc. Exper. Biol. & Med. **30**: 1097 (May) 1933. Krueger, A. P.: A Method for the Preparation of Bacterial Antigens, J. Infect. Dis. **53**: 237 (Sept.-Oct.) 1933.

2. Leslie, P. H., and Gardner, A. D.: The Phases of Haemophilus Pertussis, J. Hyg. **31**:423 (July) 1931. Gardner, A. D., and Leslie, P. H.: Early Diagnosis of Whooping Cough, Lancet **1**: 9 (Jan. 2) 1932.

3. Frawley, J. M.: The Immunization of School Children Against Whooping Cough, J. Pediat. **4**: 184 (Feb.) 1934. Frawley, J. M., Stallings, M., and Nichols, V. C.: A New Pertussis Antigen: Preliminary Clinical Report, ibid. **4**: 179 (Feb.) 1934.

4. The antigen solution for this study was furnished by Eli Lilly & Co. It was made according to the technic described by Krueger, Nichols and Frawley.[1]

5. Deissler, K.: Allergic Intestinal Reaction to Food: Report of a Case in Childhood, Proc. Staff Meet., Mayo Clin. **9**: 33 (Jan. 17) 1934.

6. Personal communication to the author from W. F. Stein, medical officer of health, Fresno, Calif.

epidemics, which are likely to occur under the present regulations, children being frequently allowed to attend school during the catarrhal stage of whooping cough when the diagnosis is most uncertain but the danger of contagion is greatest.

SUMMARY

1. Prophylactic injections of 8 cc. of active undenatured Haemophilus pertussis antigen were given to a group of 505 nonimmune school children. Injections were followed by practically no local or systemic reaction.

2. Since vaccination, these children have been kept under observation. Forty-nine have been exposed to whooping cough without developing symptoms; sixteen were exposed at home and thirty-three at school. In thirty-one children, whooping cough developed. In twenty-five cases the paroxysmal stage was of less than one week's duration, in five cases of from one to two weeks' duration and in one case of two weeks' duration or more.

3. As controls, 174 nonvaccinated children from the same homes and classrooms who had whooping cough during this period were classified on the same basis as the vaccinated children. The duration of the paroxysmal stage in these cases was as follows: In nine cases it was less than one week, in forty-nine cases from one to two weeks, and in 116 cases two weeks or more.

T. W. Patterson Building.

ABSTRACT OF DISCUSSION

DR. LOUIS W. SAUER, Evanston, Ill.: Dr. Frawley's results with a total of 8 cc. of Krueger's pertussis endo-antigen compare favorably with Madsen's recent report in which a total of 2.2 cc. of potent vaccine was injected sometime before exposure occurred. Both found the disease more severe and more prevalent among the uninjected controls. Dr. Frawley has pointed out that endo-antigen does not contain anything which is not present in potent vaccine; its distinctive features are that systemic reactions do not occur and that local reactions are rarely visible at the end of twenty-four hours. As it causes no reactions, why is the total dosage divided into four weekly injections? Since the first smallpox and typhoid immunizations, clinicians observed that immunization is often associated with local or systemic reactions of varying degree. Reactions are attributed, at least in part, to the immunizing fraction of the antigen. Immunologists, notably Cannon and Kahn, in recent years, have ascribed to certain cells of the skin an important rôle in antibody formation. Potent vaccine is thought to exert a specific action first on the local tissues, then on the blood serum. The immunity response should be enhanced by the particulate nature of vaccine which delays its absorption. Faroe Island physicians, for example, stressed the importance of local reactions, and Madsen says: "The effect is greatest in patients showing a strong reaction at the point of injection. There may be some connection between this and the curve showing the formation of antibody." Mishulow, Mowry and Scott found Berkefeld filtrates of Bacillus pertussis cultures strongly toxic and antigenic. The toxin could be neutralized by the serum of a previously immunized rabbit. Gross repeated their Shwartzman and neutralization tests. The Berkefeld filtrates of some strains were so toxic that positive reactions occurred with filtrates diluted 1:25. The reactions that follow the subcutaneous injection of immunizing vaccine (three times the Madsen dosage) have not been sufficiently severe to postpone a subsequent injection. At no time have they caused any great concern. The local redness and rise in temperature are transient whenever they occur and usually disappear within a day or two. These reactions are not due to alien protein; rarely do they resemble nonspecific reactions due to bacterial protein. Although allergic reactions have not occurred in any of the 800 immunizations during the past six years, it is advisable to give the injections not further than seven days apart. If it should be found that prolonged immunity can be conferred by a more concentrated and larger dosage of endo-antigen, it will probably be given also earlier in life; i. e., at a time when the disease is most serious.

DR. H. F. HELMHOLZ, Rochester, Minn.: This subject is one of the most important that have come before the section, because it is preventive pediatrics, in which field results are just beginning to appear. Whooping cough now stands at the top of the deaths from communicable diseases. The work presented by Dr. Frawley and discussed by Dr. Sauer opens the way for further study of active immunization. The difficulty at present is that the deaths from whooping cough are largely in the first year of life, so that immunization must be carried out during the first six months of life. The disease, much less fatal after this period, nevertheless carries with it complications that are crippling, so that, as far as the infant and the older child are concerned, there is every reason for furthering this work to the utmost. I have had but slight experience with Dr. Frawley's vaccine. There was an epidemic this winter in which twenty children were immunized. I had observed these children since birth. I knew their family history. Of this group immunized during the epidemic, three developed the disease during the process of immunization. The other seventeen were protected, with the exception of one case. There was for a period of two months constant exposure in schools and, in two instances, intimate contact in the home. One of these children who had intimate contact in the home with a brother who developed it five months after inoculation was protected. In the other instance, a child in a home exposed to an older brother did not come down with the disease. This series is entirely too small to be of any definite value, but it shows what can be hoped for when work of this kind is definitely standardized.

DR. REUBEN L. KAHN, Ann Arbor, Mich.: I was interested in Dr. Frawley's finding that children who have recently recovered from whooping cough show a marked local inflammatory reaction to a skin injection of his specific protein vaccine. Many workers consider this local reaction an allergic or hypersensitive response. I look on this reaction as an immunologic or defensive response. When Dr. Frawley injects his specific protein into a nonimmune child, the protein diffuses from the area of injection and practically no local inflammation follows. The tissues of a nonimmune animal do not possess the capability of keeping a protein or vaccine localized in the area of injection. This capability makes its appearance only after immunization. A sequel to this localizing property is the destruction of the injected protein or vaccine. This destruction is brought about by proteolysis as a result of the inflammation. When, therefore, Dr. Frawley injects his vaccine in the skin of children who have recovered from whooping cough, there follows a local inflammatory response. Having developed immunity to whooping cough, the tissues have acquired the capacity to enter into some combination with and to localize the injected vaccine, presumably to prevent its diffusion through the body. Inflammation is the next step, to aid in the local destruction of the antigen. Of interest in this connection is the recent report by Francis, from the Rockefeller Hospital, that patients who are recovering from type I pneumonia show positive skin reactions to injections of the specific soluble substance of type I pneumococcus, while those who are not recovering from this infection do not show positive skin reactions. The explanation in my opinion is the same as in whooping cough. The patient who is recovering from pneumonia possesses the capacity of localizing the specific antigenic substance and to destroy it subsequently by inflammation. The patient who lacks immunity to recover from the pneumonia lacks the capacity to localize and destroy the specific antigen and, when injected into the skin, the antigen diffuses from the injected area and no local inflammation follows.

DR. JAY I. DURAND, Seattle: It seems that for the first time there is a valuable agent for preventing and treating this disease. I have given Dr. Sauer's vaccine to about 150 children during the past year. None of them developed whooping cough after a period of four weeks following the last injection. One developed whooping cough four weeks after the last injection. I don't know whether it is going to be 100 per cent successful, but I have had two infants live in the house with older brothers and sisters who have had severe whooping

cough during the last winter, without contracting it. I have had a number of other children in kindergartens where the disease was prevalent, who have not contracted the disease. A number of these children, I should say 5 per cent, have had a reasonably severe febrile reaction the night the vaccination was given. One of the patients had a convulsion. However, none of these children have been ill enough to worry me. All have been well within twenty-four hours after the symptoms of the fever began. The reactions have not been any more severe than those following the ordinary mixed respiratory vaccines. The reaction is not to be considered if there exists, as I believe there does, an agent for preventing this distressing disease. Physicians are immensely indebted to Dr. Sauer for first making available a real method of immunization. I hope physicians are going to feel equally indebted to Dr. Frawley for supplying something that may help in the treatment.

DR. J. VICTOR GREENEBAUM, Cincinnati: I should like to ask a question. Dr. Shwartzman's exhibit downstairs beautifully demonstrates the Shwartzman reaction, which occurs after giving a second dose of filtrate intravenously. I should like to ask Dr. Frawley whether one of these severe Shwartzman reactions could occur if he happened to hit a vein at the time of the second or third inoculation with his vaccine.

DR. J. M. FRAWLEY, Fresno, Calif.: With regard to Dr. Sauer's question as to why the total dosage is divided since there is no reaction, I have felt my way along with this antigen and began, as a matter of fact, with very small doses and am now realizing that much larger doses can be given. I feel sure that as the strength of the antigen is increased so that the dosage will be cut down, as much will soon be given in one dose as is now being given in three or four doses. With regard to Dr. Greenebaum's question, there is no danger of the Shwartzman reaction following an intravenous injection of the second or third dose. I tried to elicit the Shwartzman phenomenon in animals and found it was impossible, because the toxic filtrate which is responsible for that phenomenon has been removed by the thorough washing to which the bacteria have been submitted before they have been ground down.

CARBON TETRACHLORIDE AS AN INDUSTRIAL HAZARD

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Carbon tetrachloride has many uses at the present time. Many years go it was tried as an anesthetic in place of chloroform but it was too toxic because of the high chlorine content. More recently it has been given as a remedy in hookworm and other intestinal parasitic diseases. It is at the present day used by the veterinary profession in treatment of canines. Perhaps the most frequent commercial uses of carbon tetrachloride today are the following:

1. As a solvent in the rubber industry.
2. As a cleansing agent in the dry cleaning industry.
3. As a solvent in the chemical and drug industry.
4. As an occluding and nonoxidizing agent in fire extinguishers.
5. As a solvent in the paint industry.
6. As an anthelmintic for parasites in the practice of medicine.
7. In machine shops for the removal of grease in combination with benzine in order to keep the fire hazard at a minimum.
8. As a dry shampoo in the hair dressing industry, especially in foreign countries.

The chief use of carbon tetrachloride in all of these processes is as a solvent and a diluting agent to reduce the flash point in certain other solvents. Mixtures of carbon tetrachloride and benzine and of carbon tetrachloride and benzene in ratios of 60 to 40 and 50 to 50 are uninflammable. Carbon tetrachloride is a saturated chlorine derivative of methane, CH_4, or marsh gas. Starting with the formula of methane and making substitutions with chlorine one gets, when the saturation point is reached, the extremely volatile substance carbon tetrachloride, which is a clear liquid of high specific gravity. It has a specific gravity of 1.599, a boiling point of 170.6 F. and a vapor density of 5.33.

The commercial preparation of carbon tetrachloride is as follows: (1) Chlorination of carbon bisulphide. This method produces many impurities in the finished product, especially some sulphur compounds which are toxic. (2) Chlorination of ethylene. (3) Catalytic action of the electric arc on carbon and calcium chloride.

The most toxic impurities that may be present in commercial carbon tetrachloride are phosgene, hydrogen sulphide, free hydrochloric acid, organic sulphides and carbon bisulphide. Most of these can be removed by distillation and further absorptive treatment. The increasing use of carbon tetrachloride both as a solvent and as a cleaning agent prompted me to investigate the toxicity of this substance. The following experiments were made and the reactions noted:

EXPERIMENTS WITH CARBON TETRACHLORIDE

A space was used measuring 20 by 20 by 10 feet, equaling 4,000 cubic feet, or 6,912,000 cubic inches, and containing 113,347.5 liters of air.

EXPERIMENT 1.—One milligram per liter, or 0.0158 volume per cent, or 126 Gm. to 4,000 cubic feet, or 158 parts per million. Exposure, thirty minutes.

1. Age 28: Nervous; slight nausea; pulse 120, respiration 28, blood pressure 145. Blood count normal. Hemoglobin 90 per cent.
2. Age 30: Very little effect. Pulse 85, respiration 18, blood pressure 115. Blood count normal. Hemoglobin 95 per cent.
3. Age 20: No effect. Pulse 76, blood pressure 120, respiration 17. Blood count normal. Hemoglobin 90 per cent.
4. Age 28: No effect. Pulse 70, respiration 18, blood pressure 118. Blood count normal. Hemoglobin normal.

Urinalysis in twenty-four hours gave negative results in all cases.

EXPERIMENT 2.—Five-tenths milligram per liter, or 0.0076 volume per cent, or 63 Gm. to 4,000 cubic feet, or 76 parts per million. Exposure, two and one-half hours.

1. Age 35: No symptoms. Blood pressure 118, respiration 17, pulse 75. Blood count and hemoglobin normal.
2. Age 48: No symptoms. Blood pressure 130, respiration 20, pulse 78. Blood count and hemoglobin normal.
3. Age 22: No symptoms. Blood pressure 115, respiration 16, pulse 72. Blood count and hemoglobin normal.
4. Age 30: No symptoms. Blood pressure 126, respiration 19, pulse 76. Blood count and hemoglobin normal.

EXPERIMENT 3.—Next day the same subjects were exposed for four hours and no symptoms developed from carbon tetrachloride. There was a slight tired feeling but this was due to insufficient oxidation and not to carbon tetrachloride. Urinalyses after seventy-two hours were all negative.

EXPERIMENT 4.—Two milligrams per liter, or 0.0317 volume per cent, or 252 Gm. to 4,000 cubic feet, or 317 parts per million. Exposure, thirty minutes:

1. Age 20: Slight nausea. Blood pressure 120, pulse 80, respiration 20. Blood count and hemoglobin normal.
2. Age 45: Nausea and vomiting. Blood pressure 150, pulse 88, respiration 25. Blood count and hemoglobin normal.
3. Age 36: Headache. Blood pressure 132, pulse 90, respiration 27. Blood count and hemoglobin normal. Urinalysis after forty-eight hours gave normal results.

EXPERIMENT 5.—Eight milligrams per liter, or 0.1191 volume per cent, or 1,008 Gm. to 4,000 cubic feet, or 1,191 parts per million. Exposure, fifteen minutes.

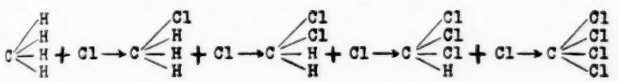
Read before the Section on Preventive and Industrial Medicine and Public Health at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

1. Age 19: Headache, nausea and vomiting. Blood pressure 130, pulse 130, respiration 22. Subject could not stay; out in nine minutes.
2. Age 21: Nausea; vomiting. Blood pressure 125, pulse 100, respiration 20. Subject stayed in twelve minutes.
3. Age 28: Nausea; headache. Blood pressure 122, pulse 110, respiration 26. Subject stayed in fifteen minutes.
4. Age 40: Nausea; headache; vomiting. Blood pressure 142, pulse 128, respiration 20. Subject stayed in ten minutes. Urine examination in forty-eight hours revealed no albumin, no sugar, increased acidity, increased phosphates; otherwise negative.

EXPERIMENT 6.—Twenty-five one hundredths gram per liter, or 0.2382 volume per cent, or 1,890 Gm. to 4,000 cubic feet, or volume 2,382 parts per million, weight 12,800 parts per million.

1. Age 40: Exposure five minutes. Dizziness, nausea, throbbing in head, sleepy. Blood pressure 150, pulse 130, respiration 28.
2. Age 26: Exposure three minutes. Nausea and nervousness; not sleepy but listless. Blood pressure 150, pulse 110, respiration 22.
3. Age 19: Exposure seven minutes. Nausea and vomiting; dizziness; sleepy. Blood pressure 129, pulse 115, respiration 23. Urinalysis in forty-eight hours disclosed no albumin, no sugar, no casts, no sediment, increased phosphates and acidity, no definite change except temporary. Examination in two weeks showed that no ill effects were caused.

EXPERIMENT 7.—Three men were asked to work with pure carbon tetrachloride by painting it on a fabric in a room that was closed but had exhaust ventilation about 6 feet away from the table over which they worked. A sample of the air



Methane. Monochlor-methane. Dichlor-methane. Trichlor-methane, or chloroform. Carbon tetra-chloride.

in the immediate vicinity of their faces was collected and analyzed by the alcohol potassium hydroxide and combustion method and found to be 0.23 per cent carbon tetrachloride. None of the men could work over ten minutes without becoming nauseated and sleepy; one vomited and developed dizziness with a throbbing feeling in his head.

EXPERIMENT 8.—Since the average man during an eight hour work period inhales 11¾ pounds of air, it was thought advisable to see how much carbon tetrachloride he would get in an eight hour period. The air within the working area was examined and found to contain 0.02 per cent of carbon tetrachloride. Several had complained of nausea and had vomited. Several had said they felt tired and sleepy when the day's work was done. Now 0.02 per cent of 11¾ is approximately 0.234 pound in eight hours. It would be 0.37 pound if the weight of carbon tetrachloride was calculated. This is sufficient for our purposes. The odor of carbon tetrachloride can be detected with as little as 0.5 mg. to a liter, and at 3 or 5 mg. to a liter it is very strong. One man who had been working in the cement house was found to have albumin in the urine. He was removed and placed on other work and the urine was examined weekly. At the end of two months the albumin had disappeared. The phenolsulphonphthalein function test showed him to have 90 per cent function. He was not placed in carbon tetrachloride after that. He was continued on his work without after-effects becoming noticeable. The albumin cleared up and there was no microscopic evidence of any pathologic condition in his urine. There probably will never be any trouble, as the rest of the kidney tissue has taken up the work.

A rabbit was exposed to carbon tetrachloride, 20 mg. per liter for three hours daily for three days. It died on the fifth day. Autopsy showed the lungs to be full of mucopurulent material. The kidneys were injected and had hemorrhagic spots. The intestinal mucosa was injected and red. The stomach was injected and showed some edema. The eyes were reddened and showed evidence of conjunctivitis. There was a beginning central necrosis of the liver.

Eight men were engaged in spraying cellulose cement on the end of liner rolls to be sent to Australia. These men constantly complained of nausea, headache and fatigue at the end of the day. The air was examined and found to contain 0.037 per cent of carbon tetrachloride. This condition was corrected and the spraying was done under a suction hood with a suction floor grating. Later inspection did not reveal any odor of carbon tetrachloride and the men said that conditions were satisfactory and they did not have any further trouble. The men in the cement house experienced the same condition and after correct ventilation was installed, no symptoms were complained of.

One milligram in a liter, 24,450 divided by the molecular weight of carbon tetrachloride, is 153.85; 24,450 divided by 154 is 158.8, the number of parts in a million from 1 mg. of carbon tetrachloride.

A guinea-pig was exposed to carbon tetrachloride, 15 mg. per liter daily for three days, then 10 mg. for four days and finally 300 mg. The guinea-pig died in two and one-half hours. The autopsy showed congestion of the lungs and bronchial tubes, with a serous exudate. The stomach was congested and inflamed. The liver showed mottled areas representing a central necrosis. The kidneys showed a congestion with what appeared to be a cloudy swelling.

From these experiments and examinations of many persons exposed to carbon tetrachloride fumes, it appears that the following symptoms may be caused:

Slight headache.
Nausea. In many cases this becomes severe and lasts for several days.
Nervousness.
Mental confusion.
Loss of weight.
Dry dermatitis.
Secondary anemia.
Slight jaundice.
Chronic spasms of muscles
Necrosis of the liver
Acidosis.
Phosphaturia and irritative nephritis.
Loss of consciousness.
Coma and death.
Visual disturbances, such as blurred vision, color confusion and disturbance of near vision.

Dr. L. T. Wirtschaffer of Cleveland has recently reported a number of cases in which a toxic amblyopia was present and states that the examination of the visual fields may be a valuable procedure for the early detection of carbon tetrachloride intoxications. There have been several cases reported in which carbon tetrachloride produced fatty degeneration of the liver, kidneys and heart with a subsequent necrosis. The action of carbon tetrachloride is very similar to that of chloroform except that it is more intense. This is due to the larger amount of hydrochloric acid liberated as it is broken down in the body.

Carbon tetrachloride plus hydrogen plus oxygen plus the influences of the body produce four molecules of hydrochloric acid, plus the oxidation products of carbon, carbon monoxide, and intermediate oxidation products, the most poisonous of which is carbonyl chloride ($COCl_2$) or phosgene.

Alcohol seems to act as a catalytic agent for carbon tetrachloride and intensifies its action. A person who is under the influence of alcohol when exposed to carbon tetrachloride becomes disoriented and often becomes maniacal.

MODES OF ABSORPTION

The modes of absorption of carbon tetrachloride are:

1. Inhalation of the fumes of carbon tetrachloride.
2. Alimentary system absorption. Carbon tetrachloride is sometimes given in small doses as a medi-

cament for hookworms and in a short time it is followed by a purge, which prevents much absorption.

3. Absorption by the skin and its appendages. Dr. Alice Hamilton reports a case in which a woman collapsed and died while having her hair shampood with carbon tetrachloride. How much absorption takes place by the hair is not determined, but I believe that the greatest absorption in this case was due to inhalation, as the heavy fumes gravitated about her nose and mouth. Dr. K. O. Møller has recently presented several cases of poisoning as a result of the use of carbon tetrachloride in the hair dressing profession and to any one who is interested in this type of exposure there is much valuable information available.

Carbon tetrachloride extracts the fats from the skin and produces a dry condition, which favors absorption and also initiates a dry dermatitis, causing the skin of the hands to crack. Often this produces avenues for secondary pyogenic infections. This condition can be corrected if the workmen will use oil of theobroma, petrolatum or a good grade of ointment of rose water (nonvanishing cream) on the skin after having used carbon tetrachloride.

As with most volatile substances, the principal avenue of absorption is the respiratory system. The occasional inhalation of small amounts of carbon tetrachloride produces very little effect unless the concentration is very high, and the lower the concentration the less the immediate effects produced. Dilutions of 0.01 per cent show very little effect over a period of six to eight hours, but if this continues daily without intermediate aeration, accumulative effects are shown and chronic carbon tetrachloride poisoning occurs. Concentrations of from 0.1 to 0.5 per cent produce very little effect if only a short exposure is made and not repeated until the next day.

The nausea and vomiting produced by exposure to carbon tetrachloride is due to a central nervous system reaction and not a local gastric one. I recall one case that was very amusing. A man was working on a traveling crane in a low ceiling building in which a mixture of carbon tetrachloride and benzene was being used over heated mandrils. There was enough heat generated to make the carbon tetrachloride very volatile and he was getting the effect of it, with the production of nausea and vomiting. He did not realize that the gastric disturbance was due to the fumes of carbon tetrachloride. When he went on his crane each morning he took a bucket to be used as a receptacle for his vomiting. He later reported to me and his condition was found to be due to the carbon tetrachloride and not to indigestion, as he thought. The condition was remedied at once by proper ventilation and reduction of the amount of carbon tetrachloride used.

If the concentration of the carbon tetrachloride is kept at a minimum and the circulation of air at a maximum, very few symptoms are noticed. A concentration of 0.01 per cent and lower can be tolerated for long periods of time. However, I do not advocate a continued exposure to carbon tetrachloride of low concentrations, for slow absorption produces the chronic stage of the poisoning and the retrograde changes in the liver, kidneys and the hematogenic organs.

PREVENTIVE MEASURES

I have always maintained that most volatile and toxic substances can be used if it is necessary, but the method of using the substance must be in perfect accord with the nature of the substance.

Ventilation is one of the most important items. This may be in the form of suction or forced ventilation. The properties of the substance must be known. For example, carbon tetrachloride is heavier than air and seeks the lowest level; therefore the chief part of the ventilation should be suction at the lowest level. If carbon tetrachloride is used in vats, tubs or containers, necessitating removal of the covers, there should be hood ventilation with a baffle plate tube surrounding the top of the container, with sufficient suction to remove the fumes as they arise when the lid is removed. When carbon tetrachloride is used in paints as a solvent, these painting operations should be carried out under a hood with both overhead and floor ventilation. Carbon tetrachloride should not be used to shampoo hair.

The type of personnel employed to work around carbon tetrachloride should be selected. The following types should not work where there is a concentration above 0.01 per cent:

Very obese persons.
Undernourished persons.
Any one with pulmonary diseases.
Those with gastric ulcers or with a tendency to vomiting.
Persons with hypertrophic or atrophic liver condition.
Those with nephritis or diabetes.
Persons with glandular disturbances, especially enlargements of the thymus and the thyroid.
Persons with blood disturbances or myocardial degeneration.

Substitution products should be used in place of carbon tetrachloride in all processes in which the change is possible. The workers should be rotated so that one individual has a chance to aerate completely and eliminate the products of carbon tetrachloride decomposition while the other is working.

Frequent examinations should be made with periodic inspection of the processes and determination of the carbon tetrachloride concentrations used. Frequent physical examinations are very valuable as an indication for the removal of a worker from the vapor of carbon tetrachloride. The use of carbon tetrachloride should be confined to closed systems and, if this cannot be done, some other substance should be substituted. Persons who are working with or around carbon tetrachloride should be examined frequently. If after examination any of the following symptoms are elicited, the worker should be removed and placed on a job in which there is plenty of ventilation and fresh air:

Persistent nausea after having worked in very low concentrations for several eight hour shifts.
Loss of appetite and loss of weight.
A 15 per cent reduction of hemoglobin.
Hyperacidity of the gastric contents.
Hyperacid urine.
Persistent headache after eight hours of rest and aeration.
Decreased blood pressure.
A marked poikilocytosis and anisocytosis.

The condition that usually follows nausea and loss of appetite is acidosis, and this is manifested very readily in those who perspire freely. An irritative dermatitis which becomes very annoying develops in the body folds.

While carbon tetrachloride is a very desirable solvent and a diluent for benzene to prevent fire, it is at the same time a very toxic substance even in its purest state. The redeeming feature of the toxicity is the fact that it produces symptoms by very slight absorption, and removal can be made before any serious conditions develop.

TREATMENT

The treatment of toxicity due to carbon tetrachloride is as follows:

Removal from contact with the substance.

Aeration—fresh air, oxygenated if necessary.

Alkalinization with sodium carbonate, calcium carbonate or intravenous calcium gluconate.

Ingestion of levulose, dextrose and animal fats.

Tincture of digitalis to protect the heart.

Hexylresorcinol for kidney irritation.

Intravenous administration of physiologic solution of sodium chloride and dextrose or Fischer's solution.

Transfusion if necessary, followed by the administration of iron compounds.

If any bronchial conditions develop, which is common after the use of certain impure grades of carbon tetrachloride, owing to the free chlorine and carbonyl chloride, inhalations of compound tincture of benzoin and pine needle oil, followed by some soothing syrup containing codeine unless the condition of the kidneys and liver contraindicate it.

Free catharsis.

Forced liquids and starchy foods.

Epinephrine should not be used in cases of carbon tetrachloride poisoning if there is a possibility of any myocardial involvement.

Carbon tetrachloride is an industrial hazard when the vapor is permitted to escape into the open room and its concentration is constantly above 0.01 per cent. The hazard can be removed by proper ventilation and using the substance in closed systems. Frequent examination of the workers will enable one to rotate them or remove them from contact with the fumes and will prevent the development of any serious condition. Research workers will no doubt provide a nontoxic substitute for carbon tetrachloride or will produce a diluent for benzene or gasoline that will eliminate the hazard.

Supervised selection of individuals to work with this substance will greatly eliminate the hazard. I am of the opinion that a single exposure to carbon tetrachloride in small concentrations does not produce any serious lasting changes, but the daily exposure with the cumulative effect produces very definite pathologic changes which deserve attention. The use of proper ventilation and safety appliances should prevent practically all cases of poisoning except those emergency ones over which there is no control.

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ABSTRACT OF DISCUSSION

DR. C. P. MCCORD, Cincinnati: In my experience, about one industrial plant in two will make use of carbon tetrachloride, although in the greater number its use is limited to fire extinguishers. Dr. Davis spoke of skin absorption and recognized it as a practical hazard—a practical source of entry. In our animal work we found that carbon tetrachloride readily enters the intact skin. The unshaven skin, to which carbon tetrachloride was applied under conditions that prevented entry by inhalation, promptly led to the characteristic manifestations of carbon tetrachloride poisoning. This means that, if animal work may be carried over to human beings, protection against inhalation of carbon tetrachloride may not always be sufficient. Some consideration perhaps should be given to the possibility of entry through the skin. Dr. Davis mentioned the respiratory disease involvement in carbon tetrachloride poisoning. In practical work and in experimental work I have often observed a bronchitis and other forms of irritation of the respiratory tract directly resulting from carbon tetrachloride. Carbon tetrachloride may be a contributing factor in pneumonia. The methods for testing carbon tetrachloride in the atmosphere are difficult. As a rough method of appraising the situation, if carbon tetrachloride odor may be readily detected in any work room, it is nearly always true that enough is there to be harmful, particularly if the exposure is long continued. I do not offer that as a precise test but merely as a suggestive one. No discussion of carbon tetrachloride poisoning should fail to mention the work of Lamson and his associates. Although it primarily has to do with the use of carbon tetrachloride in the treatment of hookworm and similar diseases, it furnishes a great deal of information of value to industry.

DR. Z. T. WIRTSCHAFTER, Cleveland: Dr. Davis said that the carbon tetrachloride mixtures were noninflammable. It would be well to remember that the evaporation rate of carbon tetrachloride is much greater than that of gasoline. When the mixture evaporates the halogen compound is the first one to escape, with the result that the originally noninflammable substance may now be inflammable. Lamson found that carbon tetrachloride produced a liver necrosis with an increase of guanidine in the blood and a subsequent fall in blood sugar. A lipemia and a cholesterolemia have been shown to be present in carbon tetrachloride poisoning as a result of central necrosis and fatty degeneration of the liver. I too found that men exposed to carbon tetrachloride had blood dextrose concentrations that were at the lower border of the normal and in some cases even below. I also found a toxic amblyopia in all my cases. This bilateral constriction of the peripheral visual fields returned to normal after the men left their work and were put on a high calcium and dextrose diet. The constriction of the color fields is marked even in the mildest case. It is of significance that carbon tetrachloride intoxication can be detected at an early stage by routine perimetric examination of exposed workers.

DR. E. R. HAYHURST, Columbus, Ohio: Few cases of intoxication are reported annually to the Ohio State Health Department. I think there is a reason other than the heavy specific gravity of its vapors, which causes them to fall to the floor. The chief feature of the three cases in our last year's reports was the association with heating the substance, by which its volatility was increased. Several cases occurred recently in one manufacturing company. None lasted over forty-eight hours, and the symptoms were those of the digestive tract only and did not amount to much. Three or four years ago however, a school janitor died of liver symptoms four days after he had applied twelve 1-pound cans of wax to a basement gymnasium floor. The wax was dissolved in a mixture of 48 per cent carbon tetrachloride and "turpentine and a light petroleum distillate 52 per cent." This was, of course, a mixed poisoning, a point I wish to make. I think that the admixture of other solvents, particularly of petroleum compounds, increases the danger (similar to alcohol). I don't believe that carbon tetrachloride is used any more as a hair cleanser, although it formerly was. Here it was mixed with other solvents in at least some of the reported cases. But whether pure or not, it should never be used as a shampoo. A recent extensive summary of the hazards of carbon tetrachloride is that by K. B. Lehmann of the Institute of Hygiene, Würzburg, in the *Zentralblatt für Gewerbehygiene* **7**:123 (May) 1930.

DR. WILLIAM D. MCNALLY, Chicago: I should like to ask Dr. Davis whether he determined the blood calcium in any of these patients. A calcium deficiency is claimed by the plaintiff in these cases. One law firm in Chicago had nineteen such cases. They occurred in a refrigerating organization in which the men were removing grease from a part of the electric refrigerator unit. Probably others in the country have the same problem. We have many cases, because when the heat is generated by electric soldering it evaporates the carbon tetrachloride, and the workers inhale it. An interesting fact about the workers in that particular industry is that if they feel sick they go out and get a sandwich, and it stops all nausea.

DR. WILSON G. SMILLIE, Boston: Samuel B. Pessôa and I had the first case of carbon tetrachloride poisoning reported in the treatment of hookworm disease. We gave the tetra-

chloride on a plantation in the interior of Brazil and had a very serious time with an alcoholic addict.

DR. P. A. DAVIS, Akron, Ohio: Dr. Hayhurst says that the reason he hasn't got so many reports is that there aren't so many cases and that the small amount of tetrachloride required to produce nausea brings the individual to the hospital to find out the cause. If a man employed in a department using carbon tetrachloride states that he cannot keep his breakfast down, an alert physician immediately knows that the man is absorbing too much carbon tetrachloride. If he is removed from the job he will be all right in twenty-four hours. On determining the blood calcium I have found that it has decreased in every case. In cases of headache, nausea or vomiting, complete aeration for from twenty minutes to two or three hours will bring about improvement, and a disappearance of symptoms in four or five hours. My plea is: Don't expose workers day in and day out until an accumulation is built up, leading to an acidosis, a central necrosis or beginning necrosis of the liver. It is too late then, and the men must be given compensation, and the more men you put on compensation, the less valuable one is to one's company.

SONNE DYSENTERY

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Sonne dysentery is an inflammatory condition of the small and large intestine characterized by a bloody and mucoid diarrhea accompanied by colic, having a short incubation period and being of a relatively nontoxic type. The disease is caused by the Bacillus dysenteriae of Sonne, which has many points of clinical, cultural and agglutination similarity to the organism causing the Flexner type of dysentery, for which it is often mistaken.

Our purpose in this communication is to present the general subject of Sonne dysentery and the detailed clinical, bacteriologic and experimental studies of a recent outbreak. The disease has been practically unknown in the United States. There is reason for believing, however, that this distinctive type of dysentery has been overlooked, that it is endemic in many parts of this country, that it can assume epidemic proportions and that there is a possible connection with certain intestinal and arthritic diseases of obscure origin.

Although other investigators, notably Duval and Shorrer,[1] described an organism similar to the bacillus of Sonne in diarrheal disease, the latter investigator [2] in 1915 was the first to establish a definite etiologic relationship to dysentery. Since then reports have appeared from various parts of the world (France, Denmark, Norway, Sweden, Japan, Scotland, England, Australia, South Africa, Canada and the United States). Bamforth [3] and Smith [4] in 1924 described the organism as a cause of enterocolitis in England, and Channon [5] in 1925 recovered the bacillus from a patient who had previously had dysentery in Egypt. The first report of the disease in South Africa appeared in 1930, when Buchanan and Raux [6] described five cases. In Canada, Johnston and Brown [7] in 1931 described twenty cases of Sonne infection in a series of 175 children suffering from intestinal intoxication or infectious diarrhea. Since 1929 several reports have appeared in the United States, notably the outbreaks described by Gilbert and Coleman [8] in 1929, Nelson [9] in 1931, Silverman [10] in 1932, Welch and Mickle in 1932 [11] and Soule and Heyman [12] in 1933.

GENERAL CLINICAL FEATURES

Age Incidence. — In the majority of cases, those affected have been children under 10 years of age. It is surprising, however, with the limited literature at our disposal to note the number of adults affected.[13] It appears quite probable that under proper conditions of medical and laboratory control an increase in the frequency of the disease in adults will be noted, for, with few exceptions, adult cases have been detected only during the course of an epidemiologic survey. The mildness of the symptoms in older people, as thus far encountered, probably accounts for the infrequency of diagnosis. This point will again be stressed in discussing the carrier problem, in explaining the endemic nature of the disease and in noting the severity of the disease in outbreaks of epidemic nature.

Seasonal Incidence. — There is no definite seasonal incidence. The disease may occur in endemic or epidemic form at any time, though most of the large outbreaks have been in winter.

Social Aspects.—Except when the disease has started in hospital wards, it appears to be most prevalent among the poorer classes. Being essentially a contact infection, it frequently affects many members of the same family. In our studies positive cultures were obtained in all three children of one family, including the patient to whom the outbreak was finally traced. The importance of general good hygiene and sanitation is stressed by the observations of Fyfe, who reported an epidemic affecting 150 persons. This was a milk-borne outbreak started by a dairyman's wife. The cases reported by Gilbert and Coleman in New York State included five occurring in a city during an out-

From the Departments of Laboratories and Medical Research, the Bronx Hospital.

1. Duval, C. W., and Shorrer, E. H.: Report on Studies of Diarrheal Diseases of Infancy; Studies from the Rockefeller Institute of Medical Research **2**: 42, 1904.
2. Sonne, Carl: Neber die Bakteriologie der Giftarmen Dysenteric-bacillen, Centralbl. f. Bakt., Orig. **75**: 408, 1915.
3. Bamforth, J.: Small Outbreak of Dysentery Associated with Unusual Bacillus, J. Hyg. **22**: 343 (March) 1924.
4. Smith, J.: Enteritis Due to B. Dysenteriae Sonne, J. Hyg. **23**: 94 (Sept.) 1924.
5. Channon, cited by Clayton, F. H. A.: A Case of "Sonne" Dysentery in England, Lancet **1**: 391 (Feb. 19) 1927.
6. Buchanan, G., and Raux, P.: The Sonne Type of Dysentery in South Africa, J. M. A. South Africa **4**: 685 (Nov. 22) 1930.
7. Johnston, M. M., and Brown, A.: Cases of Intestinal Intoxication in Children Attributed to B. Dysenteriae Sonne, Canad. M. A. J. **24**: 364 (March) 1931.
8. Gilbert, R., and Coleman, M. B.: Cases of Dysentery in New York State Attributed to B. Dysenteriae Sonne, Am. J. Pub. Health **19**: 312 (March) 1929.
9. Nelson, R. L.: Sonne Dysentery: A Report of Thirty Cases of Dysentery in Children Caused by B. Dysenteriae Sonne, Am. J. Dis. Child. **41**: 15 (Jan.) 1931.
10. Silverman, D. N.: Occurrence and Significance of Certain Strains of B. Dysenteriae in Bacillary Dysentery in New Orleans Area, Proc. Soc. Exper. Biol. & Med. **29**: 664 (Feb.) 1932.
11. Welch, H., and Mickle, F. L.: Bacteriological and Antigenic Analysis of Shigella Paradysenteriae Sonne Isolated from 9 Cases, Am. J. Pub. Health **22**: 263 (March) 1932.
12. Soule, M. H., and Heyman, A. M.: Bacteriologic and Serologic Study of 89 Cases of Dysentery in Which B. Dysenteriae Flexner and B. Dysenteriae Sonne Were Isolated as Causative Agents, J. Lab. & Clin. Med. **18**: 549 (March) 1933.
13. Some of the reported cases include:
Clayton.[5]
MacGill, J. S., and Downie, A. W.: Sonne Dysentery in an Industrial Town, Lancet **2**: 29 (July 2) 1932.
Cann, L. W., and de Navasques, S.: Epidemic Dysentery in Nursing Staff Due to B. Dysenteriae Sonne, J. Hyg. **31**: 361-372 (July) 1931.
Wiseman, W. R., cited by Johnston and Brown.[7]
Richards, R.: Bacillary Dysentery in Aberdeen, Brit. J. Child. Dis. **24**: 31 (Jan.-March) 1927.
Fyfe, G. M.: Milk-Borne Sonne Dysentery, J. Hyg. **26**: 271 (Aug.) 1927.
Clayton, F. H. A., and Hunter, J. W.: Infection with B. Dysenteriae Sonne; Fatal Case Involving Small Intestine and Simulating Food Poisoning, Lancet **2**: 649 (Sept. 29) 1928.
Johnston and Brown.[7]
Nelson.[9]
Fraser, A. M.; Kinloch, J. P., and Smith, J.: Sonne Dysentery in Aberdeen, J. Hyg. **25**: 453 (Nov.) 1926.

break of intestinal disorders associated with a polluted water supply.

Symptomatology.—From the standpoint of symptomatology, Sonne dysentery may be divided into three main types:

1. Symptomless Type: In this group the diagnosis is made incidental to an epidemiologic survey and no history of indisposition, fever or diarrhea can be obtained. The fecal cultures or agglutination tests are positive and the individual concerned can definitely be ruled out as a carrier. In borderline cases only the most careful questioning will elicit a doubtful history of a few loose bowel movements but no other symptoms. Sometimes a history of a transient attack of "food poisoning" resembling Salmonella infection may be obtained. It is quite possible, too, that some of the cases of toxic arthritis of unknown etiology, but known to occur in Flexner and Shiga dysentery, fall in this group. Arthritis occurring in dysentery is of particular interest, too, as bearing a possible relationship to a similar condition quite frequently seen in idiopathic ulcerative colitis, for it is generally admitted that the latter disease, in some cases at least, may be the aftermath of an undiagnosed bacillary dysentery or a recognized type in which the specific organisms and the agglutination titer have disappeared.

At least three of our cases fall in this group:

CASE 1.—B. S., aged 7½ years, operated on for mastoiditis and sinus thrombosis, during an uneventful convalescence had a soft bowel movement of which a culture was made and found to be positive. There were no symptoms referable to the intestinal tract, no rise in temperature or diarrhea. The duration of the illness was one day.

CASE 2.—S. T., aged 2 years, convalescing from pneumonia, had two loose stools with mucus on the first day and three loose greenish stools on the second day. There were no other signs or symptoms and no change in temperature, which had been ranging between 99 and 100 F. The duration of the illness was two days.

CASE 3.—I. S., aged 10 years, operated on for acute appendicitis with subsequent uneventful recovery, had four loose bowel movements nine days after operation and on the following four days five, one, three and one. There were no constitutional symptoms and no rise in temperature. The duration of the illness was five days.

2. Mild Type: Most of the reported cases in older children and adults have been mild. This is the characteristic form of the disease as generally encountered up to the present, thus marking it off at once clinically from the Shiga and Flexner types. The distinguishing clinical features are the shorter duration and a lessened tendency to pyrexia, tenesmus and profuse bloody stools than the other forms of dysentery. The onset is generally without noteworthy prodromal symptoms other than slight lassitude or anorexia. The only symptoms may be a mild diarrhea with mucus, soft greenish diarrheal or watery bowel movements and a little abdominal discomfort. There may be little or no rise in temperature. The stools vary from three to eight or more per day and usually contain specks or larger quantities of bright red blood. The surprising fact is the well being of the patient, who complains little or not at all. After a period varying from a few days to perhaps two weeks the bowel movements gradually subside, the feces become well formed, and the disease appears to be at an end. There are generally no bad after effects, no noticeable prostration and no pronounced anorexia or loss in weight. Practically all of our cases among children fell in the mild group. The majority of our patients could be grouped under the mild type of the disease. The following are examples:

CASE 4.—M. S., a girl, aged 8 years, admitted with dysentery which was incorrectly diagnosed as acute appendicitis, complained of pain in the right loin radiating to the umbilicus of one day's duration. This was accompanied by anorexia, headache and three attacks of vomiting. There was some tenderness over McBurney's point and in the right loin. The urine contained some albumin. The total leukocyte count was 4,000 per cubic millimeter with a normal differential. The admission temperature was 101.2. At operation there was found a quite normal appendix but an enlarged mesenteric lymph node. Pathologic examination revealed moderate lymphoid hyperplasia of the solitary nodules in the appendix and marked lymphoid hyperplasia in the node, but no necrosis. On the day of admission there were many bowel movements and on subsequent days they varied from three to nine, the average being seven. During the first three days, bright red blood was present. The postoperative temperature varied from 98.6 to 100 F. The patient served as the focus of dissemination in the outbreak and was followed up for four months. The positive fecal cultures and high agglutination titers of the serum continued for approximately four months.

Several points are noteworthy with regard to this case. At least two other instances of Sonne dysentery being mistaken for appendicitis are reported in the literature.[14] The misleading symptoms suggesting appendicitis and the mesenteric adenitis are due to the marked lymphoid hyperplasia seen in Sonne dysentery. This is most evident in the region of the ileocecal valve, where edema and a ring of lymphoid hyperplasia may be noted. This, as well as mesenteric adenitis, have already been described by other investigators.[15] Evans made special note of the enlarged nodes at the ileocecal angle. The other features of case 4 are the low total leukocyte count and the unusual persistence of positive cultures. Those in the other two children of the family did not remain positive quite so long. Fecal cultures in Sonne dysentery usually do not remain positive for more than one to three weeks, which practically excludes the possibility of the carrier problem in this disease. The duration of the illness was approximately two weeks.

CASE 5.—R. W., aged 8 years, developed dysentery after the resolution of a lobar pneumonia. Without any prodromal symptoms there occurred a sudden rise in temperature from 98.2 to 103.6 F. On the same day there were four loose watery, bloody bowel movements containing some mucus. The temperature dropped on the following day to 99 and remained at that level for the next five days, when there were five, five, five, two and one bowel movement. The duration of the illness was six days.

CASE 6.—G. M., aged 10 years, was convalescing from lobar pneumonia. Except for slight abdominal cramps, the onset was sudden with no prodromal symptoms. Six diarrheal movements with blood and mucus occurred on the first day and were accompanied by a rise in temperature from 100 to 104 F. The average on the subsequent four days was three stools. The duration of the illness was five days.

CASE 7.—P. H., aged 14 months, convalescing from bronchopneumonia had a sudden onset with vomiting. Six foul, green, watery bowel movements containing mucus occurred on the first day. There was a slight rise in temperature from 99 to 100 F., with a prompt drop to 99 on the second day, where it remained except for a recrudescence to 101.4 on the fifth day. There were no constitutional symptoms. The bowel movements varied from one to nine a day, the average being five. The duration of the illness was twenty-six days. This case is noteworthy because of the long duration of active symptoms. Sonne dysentery is apt to manifest its gravest form in infants.

3. Severe Type: The onset is sudden and suggestive of a severe Flexner infection with abdominal pain, and diarrheal stools containing mucus and blood. Vomiting may be severe, accompanied by profound pros-

14. Clayton.[5] Nelson.[9]
15. Harvey, E.: Dysentery as a Cause of Sudden Death, Lancet **1**: 190 (Jan. 28) 1933. Evans, W. H.: Fulminating Dysentery in Child, Caused by B. Dysenteriae Sonne, Brit. M. J. **2**: 96 (July 21) 1928.

tration. Some of these cases are mistaken for "food poisoning." Anorexia is marked. Dehydration and acidosis are prominent features, especially in infants. The temperature remains quite high for several days, reaching 104 or 105 F. The drop to normal generally coincides with the cessation of diarrhea and improvement of subjective symptoms. This type is apt to occur in infants during epidemics. Our severest cases were encountered, however, in adults and, though of very short duration, were characterized by sudden onset, profound prostration and severe bloody diarrhea lasting one or two days. This was quite striking, as the cases occurred at the height of the outbreak among the children who appeared to be remarkably well. It points to the strange vagaries of Sonne dysentery. Of course we

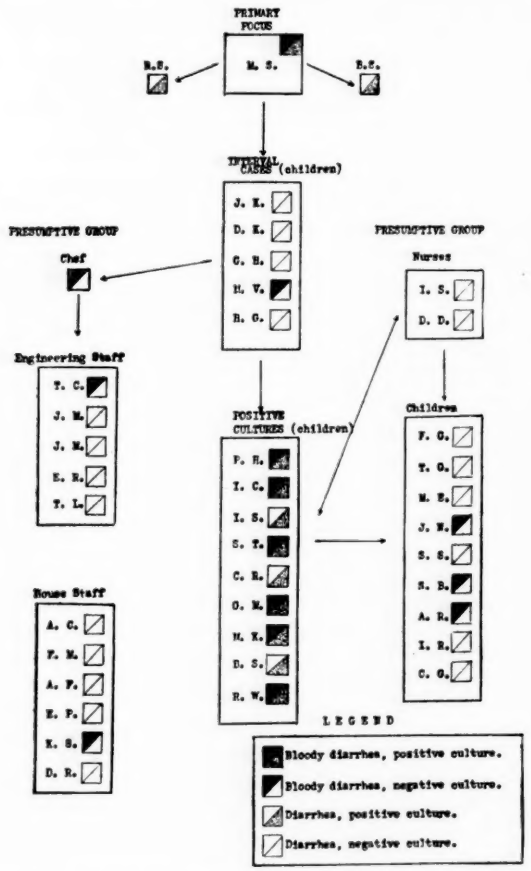

Chart 1.—Epidemiologic survey of an outbreak of Sonne dysentery.

cannot predicate our statement on actual cultural and serologic proof, since we learned of the adult cases too late to permit of accurate study. Moreover, the bacterial and agglutination criteria of Sonne dysentery are very transitory and irregular, as pointed out by MacGill and Downie, and do not appear to be related to the severity of the disease. Fraser, Kinloch and Smith [13] made similar observations and paralleled their observations with the clinical aspects. It might be added that the adult cases were erroneously regarded as due to "food poisoning," and the symptoms were believed to have occurred shortly after the evening meal. The two patients who showed ulcerative lesions by sigmoidoscope belong to this group.

Among the children, the following case is of interest:

CASE 8.—C. R., aged 5 years, recuperating from an injury but feeling perfectly well otherwise, gradually developed a marked apathy and anorexia. At about the same time there occurred a rise in temperature to 101 F. and on this day there were four loose stools containing mucus. The pyrexia gradually reached 104 on the third day and then fell to 99 on the sixth. The maximum daily stools were six. The duration of the illness was six days.

EPIDEMIOLOGIC STUDY OF HOSPITAL OUTBREAK

The following data concern an epidemiologic study made of an outbreak of Sonne dysentery which occurred at the Bronx Hospital during the latter part of December 1933 and January 1934:

The existence of an unusual intestinal disturbance among hospital patients first came to the attention of the senior author when a member of the intern staff asked for an opinion on a warm wet smear made from the feces of a patient in the children's ward. He had been endeavoring to find Endamoeba histolytica. On questioning, it was ascertained that the child whose specimen he was examining had had several diarrheal stools with blood and mucus. The absence of Endamoeba, the search for which the intern had pursued with commendable zeal, and the presence of what appeared to be an acute intestinal condition aroused our interest. It was soon discovered, after careful inquiry, that there had been and still were a number of other cases of unexplained diarrhea in the children's ward. Careful laboratory and clinical studies convinced us that we were dealing with an inflammatory condition of the intestine, characterized by a bloody and mucoid diarrhea accompanied by colic, of the nonamebic type, having a short incubation period, and of a relatively nontoxic type. We ventured the diagnosis of Flexner dysentery and advised that the matter be taken in hand before it spread through the entire hospital. Indeed, within a few days we discovered that approximately twenty men on the engineer's staff had come down with diarrhea, three or four of them bloody; that four or five men on the housekeeper's staff had been similarly affected and, most important of all, a member of the kitchen staff was involved. At first glance, the problem appeared simple and clear cut; i. e., that the outbreak had been started by this member of the kitchen staff; but repeated cultural and agglutination tests were negative for B. dysenteriae, all types. While this did not conclusively rule out this individual as being a focus of dissemination, it appeared advisable to seek elsewhere for more positive evidence. It was soon found in the person of a little girl, M. S., who had been admitted to the surgical service for an acute appendicitis. We ascertained, however, that on the day of admission she had had cramps and diarrhea. Her appendix was removed the following day, but the diarrhea persisted (varying from three to nine movements a day), the feces showing bright red blood on two days. On the day of her discharge, eight days after operation, she still was having eight stools a day. At the time of the inquiry, this little patient had already been home for eight weeks. We succeeded, however, in obtaining fecal specimens from the patient during the tenth week and also from the two other children in the family. All were positive culturally for the B. dysenteriae of Sonne.[16] We could not explain, however, to our own satisfaction, the interval between the discharge of this little girl (October 18) and the occurrence of dysentery in the other children during the latter part of December. We felt that other cases must have filled the intervening

16. We could not definitely ascertain the source of infection in the child who served as the focus of dissemination. Both parents proved negative on repeated examination. The father, however, who was a traveling salesman, had experienced a bloody stool four months previously, which he had attributed to hemorrhoids. There were no domestic animals in the family and no relatives affected, nor had the child been away from home.

gap and accordingly had the charts for all children admitted to the hospital from October 15 to December 15 reexamined and were rewarded by discovering five obvious cases of dysentery from November 3 to December 15. One of these children, M. V., had had a bloody diarrhea.

The ward was quarantined and we commenced an intensive survey of the nursing staff, kitchen help, engineering staff and all possible contacts. Cultures were taken of all food, both boiled and unboiled. The one kitchen suspect was relieved of responsible duties. The results of these studies may be summarized as follows:

Eleven children showed positive cultures for B. dysenteriae Sonne. Eight other children, three of them having had bloody stools, were diagnosed clinically as having bacillary dysentery, even though we could not prove it either by cultural or by agglutination tests. The probability of accurate diagnosis in this group on clinical evidence alone is apparent, however, from certain known facts already mentioned with regard to the Sonne type of dysentery. Similarly, fifteen members of the engineer's staff fell in the same group; i. e., culturally and agglutination free, except for a questionable organism in one case. Two of this group had bloody diarrhea and of these, one (K. S.) showed several superficial small follicular healing ulcers at the rectosigmoid. Another (J. M.), who had not noted any blood in the diarrheal stool, showed two follicular lesions, one surrounded by an inflammatory vascular caput medusae. Two nurses in the children's ward had had diarrhea and could with reasonable certainty be included in the presumptive group. The member of the kitchen staff who had had a severe diarrhea was similarly classified. All of these cases occurred between December 18 and January 4, except the interval group, which covered the period between the first case (M. S.) in October and the time the outbreak was recognized in the latter part of December. Through proper isolation measures further spread of the disease was prevented, and by the end of January the outbreak was definitely terminated. The total number of persons involved was forty.

The short and relatively mild course of the disease and the limited period during which cultural and agglutination studies proved to be positive account for the fact that many of these cases were unrecognized, even when hospitalization took place before the inception of the disease, as occurred at the Bronx Hospital. It is of interest to note that at the time of this outbreak it was ascertained that a similar condition appeared to prevail at other hospitals in this section of the city. The clinical aspects were very similar to those described in this paper. The transitory and relatively benign character of the Sonne dysentery in our patients is evidenced by the fact that in some children the diarrhea lasted only from twenty-four to forty-eight hours and in none was it accompanied by any marked constitutional symptoms, by dehydration or by more than a slight rise in temperature. It is quite probable, however, that in epidemic form the clinical and laboratory picture might be intensified, the virulence being enhanced by repeated passage through many human contacts. The mildness of the disease and missed cases in the outbreak reported brings up the question of the carrier problem. Ritchie, in a study of 792 normal serums, found that 30 per cent agglutinated Shiga strains in a dilution of 1:32, and that 41 per cent agglutinated Flexner strains in a dilution of 1:64 and 30 per cent in 1:128. This does not appear to be true for B. dysenteriae Sonne, but an increased incidence of the disease in this country may alter this fact.

We were able to make a sigmoidoscopic study of only a limited number of adults in the presumptive group (diarrhea with or without blood). Two cases showed ulceration of the mucosa with inflammatory reaction. In most of the cases with positive cultures there was probably only a reddening of the mucosa or very superficial and slight ulceration to account for the bleeding. We predicate this assumption on the experimental data in rabbits. We injected rabbits intravenously with pure cultures of the Sonne organism recovered from our cases. In some of the animals it took as much as 8 cc. of a heavy suspension to produce diarrhea, and the organisms were recovered in the animals' feces. Postmortem examination revealed only a slight edema of the intestinal mucosa, localized patches of hyperemia (chiefly in the colon), but no ulceration. These results were confirmed by microscopic section. It is of interest to note that almost all the rabbits survived the heavy inoculations, it being necessary to kill them for the pathologic studies. Their survival corresponds to the mild clinical course observed in our studies. Flexner in 1906 called attention to the fact that in bacillary dysentery the intestinal lesions are due to the excretion of dysentery toxin through the bowel wall rather than to any local action of the bacteria. He was able to produce the characteristic intestinal lesions in rabbits by the intravenous injection of the toxic autolysate. Experimentally, we may state that in the Sonne organisms studied by us neither the toxin nor the bacillus produced ulcerations in the rabbit's bowel, though the organisms injected intravenously were recovered in the feces. It is quite probable that the mucus observed in the stools in all our diarrheal cases was sufficient to protect the mucous membrane of the intestine against the relatively nontoxic Sonne strain.

CULTURAL, IMMUNOLOGIC AND ANIMAL STUDIES

Method of Isolating Organisms.—Fresh fecal suspensions were streaked on Endo plates and incubated over night. When the presence of colorless colonies typical of the typhoid-dysentery group were noted, single colonies were restreaked on this medium. After we confirmed the presence of the suggestive organisms, single colonies were inoculated into sterile broth (p_H 7.8). From these broth cultures inoculations were made on Russell double sugar and plain agar slants (p_H 7.4). Although the combined use of these differential mediums allowed for tentative classification of the organisms among the typhoid-dysentery group, more extensive fermentation tests were carried out.

Fermentation Tests. — Inoculations were made into sterile broth containing 2 per cent of the specified carbohydrates with litmus as an indicator. One-tenth cubic centimeter of an eighteen hour culture was used as the inoculum for each tube and readings were taken after forty-eight hours' incubation. The tubes were replaced in the incubator because it was noticed that some of the strains produced acid in lactose after prolonged incubation (delayed lactose fermentation). This characteristic was not constant. Tests for indole production were made in peptone water cultures that had been incubated for five days.

Morphology. — The organisms are short bacilli, 3 microns in length and 0.5 micron in width, with parallel sides and rounded edges. There was a slight variation

from this modal form in some of the cultures but not to any great degree. None of the organisms are motile and all are gram negative.

Type of Growth.—The organisms grow well on all ordinary mediums. Twenty-four hour cultures on agar plates of all the isolated strains vary but slightly from the following description. The colonies are circular, raised, convex, smooth and colorless. They are about

TABLE 1.—*Cultural Characteristics of Organisms Isolated from Positive Cases (Sonne Dysentery)**

Patient	Endo Plate	Motility	Russell's Double Sugar	Dextrose	Galactose	Lactose	Maltose	Mannite	Salicin	Sucrose	Indole
P. H.	+	0	Acid Butt	A	A	0	A	A	0	0	0
I. C.	+	0	Acid Butt	A	A	0	A	A	0	0	0
I. S.	+	0	Acid Butt	A	A	0	A	A	0	0	+
M. S.	+	0	Acid Butt	A	A	0	A	A	0	0	+
S. T.	+	0	Acid Butt	A	A	0	A	A	0	0	0
B. S.	+	0	Acid Butt	A	A	0	A	A	0	0	+
C. R.	+	0	Acid Butt	A	A	0	A	A	0	0	0
G. M.	+	0	Acid Butt	A	A	0	A	A	0	0	0
M. K.	+	0	Acid Butt	A	A	0	A	A	0	0	0
B. S.	+	0	Acid Butt	A	A	0	A	A	0	0	+
R. W.	+	0	Acid Butt	A	A	0	A	A	0	0	+

* The colonies on twenty-four hour agar plates measure from 1 to 3 mm. and are circular, raised, convex, smooth and colorless. The organisms are short, Gram-negative bacilli with parallel sides. Variations in indole production by B. dysenteriae Sonne have been noted by many investigators. A denotes acid.

from 1 to 3 mm. in diameter and have a butyroid consistency. There is a slight tendency to roughness, which is lost in a few transfers. In broth, there is usually an abundant growth with uniform turbidity.

About thirty organisms that were isolated from patients were tested. However, many of them which were not included in table 1 gave late fermentation of lactose with the production of gas. The other sugars showed early formation of acid and gas. These strains, which were gram negative, showed the presence of a capsule, and because of their action on the carbohydrates we concluded that they were Bacterium aerogenes. The organisms listed in table 1 gave uniform reactions in the sugars, except for one detail: a few of them, after prolonged incubation, showed a slight acid production in lactose. This was not noted in all the strains and the acid production was not very strong. Otherwise the strains all fermented dextrose, galactose, maltose and mannite with the production of acid.

With these data in hand we were able definitely to include these organisms among the dysentery group. To determine which member of this group was involved, we decided to study the organism serologically. Because of the mannite fermentation and the irregular indole production, we thought the causative agent belonged to the Flexner type of dysentery organisms.

AGGLUTINATION STUDIES

Preparation of Immune Serums.—Rabbits were immunized to the following organisms: B. dysenteriae Shiga, B. dysenteriae Flexner Y, B. dysenteriae Sonne, B. dysenteriae Mount Desert, and the organism isolated from patient I. C. Eighteen hour agar cultures were emulsified in 0.85 per cent saline solution and the emulsions were treated with 0.5 per cent solution of formaldehyde. The formaldehyde treated suspensions, tested for sterility, were injected into rabbits on three successive days. The animals were allowed to rest four days and the immunization process was repeated. After each rabbit had received a total of twelve injections, seven days elapsed before a trial bleeding was resorted to. When the serums contained antibodies to sufficiently high titer, the rabbits were bled to death from the carotid artery.

Agglutination Tests.—Serial dilutions of the serums were made and to 0.5 cc. of the diluted serum, 0.5 cc. of an eighteen hour broth culture (p_H 7.0) was added. Suitable controls were used and the mixtures were incubated at from 52 to 55 C. for four hours. Readings were taken and the tubes were refrigerated over night. Final readings were taken after the tubes had been placed in the refrigerator over night.

Using the immune serums obtained by the methods described, we performed agglutination tests with all the suspected organisms with the results listed in table 2.

In each case, agglutination with the anti-Sonne serum gave the highest titer and most consistent results. That some degree of agglutination did occur with the other serums can best be explained only by the heterogeneity of the dysentery group of micro-organisms fermenting mannite. This heterogeneity is manifested in the agglutination of B. dysenteriae Sonne with the anti-Flexner and anti-Shiga serums. The titer in this group agglutination is not as high, however, as with the homologous organism. From these agglutination and fermentation reactions, we felt justified in concluding that the organism we were dealing with was B. dysenteriae Sonne.

Of further interest are the results of the cross agglutination obtained with these strains. It shall suffice to state that serum obtained from patient P. H. was able to agglutinate the strain isolated from G. M. to a titer as high as 1:400. Further, a serum obtained by immunizing a rabbit with the strain from G. M. was able to agglutinate all the other strains listed in the table. All

TABLE 2.—*Agglutination Tests with Organisms Isolated from Positive Cases**

	Immune Serums			
Patient	Anti-Shiga	Anti-Flexner	Anti-Sonne	Anti-Mount Desert
P. H.	0	0	1:320	0
I. C.	0	0	1:320	1:50
I. S.	1:160	1:160	1:320	1:100
M. S.	1:160	1:40	1:320	
S. T.	1:320	0	1:640	
G. M.	0	0	1:640	
B. S.	1:20	1:40	1:640	1:200
C. R.	0	0	1:320	
M. K.	0	0	1:320	
B. S.	0	0	1:320	
R. W.	1:40	1:20	1:640	

* This table shows the agglutination titers reached by the patient's organism in the presence of the known serums. The numbers represent the highest dilution of the serum in which complete agglutination occurred.

the strains were agglutinated to practically the same titer. When one organism is agglutinated by a serum prepared against another organism and when the process can be reversed with similar results, these two agglutination tests constitute the "mirror test." This test is used to establish definitely the identity of two or more strains. The fact that we were able to perform this "mirror test" with all our strains greatly strengthens our conclusion that all the strains listed in table 2 were B. dysenteriae Sonne.

In a previous section we mentioned certain strains which were isolated and which because of their actions

on sugars we identified as Bacterium aerogenes. We attempted to agglutinate these strains with the known antiserums, but in no case was any clumping perceptible. These tests thus served as suitable controls for the other strains and provided a clear-cut differentiation between the B. dysenteriae Sonne organisms and Bacterium aerogenes.

Pathogenicity.—Live cultures of the Sonne organisms recovered from the patients were injected into rabbits with the following results:

RABBIT 1.—Injected intravenously with 4 cc. of a forty-eight hour culture of strain G. M. Twenty-four hours later the rabbit showed a profuse bloody diarrhea and the injected organism was recovered from the fecal material. The rabbit was killed two days after the injection and the gastro-intestinal tract was searched for ulcers. None were found.

RABBIT 65.—Injected intravenously with 2 cc. of an eighteen hour culture with strain G. M. The next day the animal showed signs of diarrhea. This rabbit lived for weeks after the injection, but a fecal culture seventy-two hours after the injection yielded strain G. M.

RABBIT 78.—Injected intravenously with 2 cc. of an eighteen hour culture of strain G. M. In forty-eight hours after the injection there were signs of collapse and bloody diarrhea. The animal was killed three days after the injection and, although the feces contained the injected organism, no evidence of ulcer formation could be seen.

RABBIT 7.—Injected intravenously with 8 cc. of an eighteen hour culture of strain B. S. A profuse diarrhea ensued and culture of the intestinal contents yielded the injected organism.

Chart 2.—Antigenic heterogeneity of mannite-fermenting group of dysentery organisms. This shows the heterogeneity of the Flexner group and the presence of all the antigenic factors in Flexner Y. The presence of B. dysenteriae Sonne antigen in all the Flexner strains demonstrates the possibility of agglutinating B. dysenteriae Sonne in immune Flexner serum. The reverse, however, is not possible.

The rabbit died in twenty-four hours and postmortem examination showed a hyperemia and congestion of the small and large intestine. No ulcers were seen.

RABBIT 13.—Injected intravenously with 4 cc. of an eighteen hour culture of strain B. S. The animal died in twenty-four hours with a profuse diarrhea. Intestinal ulcers could not be found, but the strain injected was recovered from the feces.

Attempts to reproduce the disease by feeding live cultures were repeated without success. This confirms the well known fact that bacillary dysentery cannot be reproduced experimentally in animals by oral administration of the causative organism.

CONCLUSIONS

1. Sonne dysentery chiefly affects children and is characterized by a short incubation period, brief course and general mildness.

2. The disease exists in endemic and epidemic form in the United States.

3. With increasing incidence it is expected that the general character of the disease will change and, in epidemic form, affect more adults and cause a higher degree of mortality in children.

4. Sonne dysentery is a contact infection and outbreaks can be terminated by proper epidemiologic measures.

5. The effects of high titer serums in patients and of specific vaccines in contact cases are now being studied.

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THE DIAGNOSIS AND TREATMENT OF PULMONARY ABSCESS IN CHILDREN

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Pulmonary abscess is not diagnosed as frequently in children as in adults probably because it occurs less commonly and is more difficult to differentiate from other pulmonary infections. Among 2,250 cases of lung abscess collected from the American literature, only fifty-nine were in infants and children.[1] Unquestionably the disease occurs more often than these figures indicated, since a majority of the clinics reporting cases did not treat children. Among 2,119 patients admitted to the pediatric service of the Duke Hospital, seven had pulmonary abscess. An analysis of 172 consecutive cases of lung abscess by Flick and his co-workers [1f] showed 6.4 per cent in the first decade, 10.5 per cent in the second, 27.9 per cent in the third, 30.8 per cent in the fourth, 18.6 per cent in the fifth, 3.6 per cent in the sixth and 2.3 per cent in the seventh decade of life.

Multiple embolic abscesses of the lung, which present themselves during a general septicemia, are regarded as an integral part of the septic disease and will not be discussed in this article.

The thirty-nine cases collected from the literature, supplemented by six previously reported from the Duke Hospital,[2] have been analyzed for predisposing causes. Among these forty-five cases twenty-four followed pneumonia, thirteen followed tonsillectomy, one followed aspiration of a foreign body, one followed exposure, and one followed aspiration of a membrane in a case of Vincent's angina.

There are four possible routes by which the infecting material may reach the lung. It may be introduced directly by a penetrating wound, it may drain in through the lymphatics, it may enter through the blood stream as an embolus, or it may be aspirated. There was no evidence in any of the cases studied that the material entered by either of the first two routes. Cutler and his co-workers [3] believe that most, if not all, of the abscesses following operations are embolic in origin. Certainly those following aspiration of a foreign body must reach the lungs through the air passages and those that follow pneumonia are logically explained by the same mechanism. Abscesses that follow operation in sterile fields, which remain sterile, are best explained by the aspiration of infected material while the patient is under an anesthetic. It is my opinion that the majority of the cases which follow operations on the tonsils and other structures in the upper respiratory tract are also due to simple aspiration.

From the Duke University School of Medicine.

Read before the Section on Pediatrics at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 14, 1934.

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The facility with which material from the mouth and pharynx is aspirated into the lungs has been demonstrated in the past few years by numerous investigators. Mullins and Ryder,[4] Corper [5] and Lemon [6] have shown that normal unanesthetized rabbits readily aspirate foreign material from the pharynx into the lungs when held on their backs with the head elevated. By bronchoscopic examination immediately following tonsillectomy under general anesthesia, Myerson [7] has demonstrated blood below the vocal cords in 76 per cent and the Dailys [8] in 78 per cent of the patients examined. Aspiration may occur even when the tonsils are removed under local anesthesia. Ochsner and Nesbit [9] found that every patient with local infiltratious anesthesia aspirated iodized oil while attempting to swallow; and Iglauer [10] noted blood in the trachea in 38 per cent of patients whose tonsils had been removed under local anesthesia. Hamilton [11] observed aspiration of iodized oil in two patients asleep from the effects of an opiate and in one patient in a normal sound sleep.

In children as in adults, pulmonary abscesses can be divided on the basis of etiology into (1) bacterial abscesses, (2) fusospirochetal abscesses and (3) fungous abscesses. Kline [12] believes that the term abscess should be reserved for the bacterial type and that the fusospirochetal type should be designated as pulmonary gangrene. There is much to be said in favor of this view. As a rule the bacterial abscesses are not gangrenous while the fusospirochetal abscesses, whether diffuse through one or more lobes or limited to a small area in one lobe, are always gangrenous. The exceptions in this classification would be, first, the bacterial abscesses due to colon bacilli which gives foul sputum without the lung being gangrenous and, second, the bacterial abscesses caused by Clostridium welchii and other gas gangrene bacilli in which the lung is gangrenous. I prefer to use the word abscess in its descriptive pathologic sense and preface it with the name of the specific etiologic agent. Thus one may speak of a staphylococcic abscess of the lung, an actinomycotic abscess of the lung or a fusospirochetal abscess of the lung. The reason for including the fusospirochetal infection as a specific etiologic unit will be discussed later.

BACTERIAL ABSCESS

Any pathogenic bacterium that gains access to the lungs may cause an inflammation and infiltration of the pulmonary tissues, but the ability to initiate abscess of the lung is limited to those organisms which produce proteolytic or necrotizing enzymes. The common bacteria that produce abscesses are staphylococci, Friedländer's bacilli, certain streptococci, Bacillus pyocyaneus, Bacillus influenzae and the members of the gas gangrene group of bacilli. When careful bacteriologic studies have been made in a sufficient number of cases of pulmonary abscesses in children for one to speak in terms of statistics, I believe the staphylococci will be found to be the etiologic agent in at least 75 per cent of the bacterial type of abscess and in 50 per cent of all abscesses in children.[1b]

FUSOSPIROCHETAL ABSCESS

In 1867 Leyden and Jaffé [13] found spirochetes in the sputum and in the lungs of adults with pulmonary abscesses. Jaffé is quoted by Miller [14] as having obtained in 1886 "progressive contraction of the trachea and real pulmonary abscess following introduction into the lungs of rabbits of shreds and casts from the mouth." Rona [15] in 1905 observed both fusiform bacilli and spirochetes in pulmonary gangrene. Buday [16] in 1910 described in detail the pathologic changes in thirty-five cases of pulmonary abscess and gangrene and demonstrated by stains the presence of fusiform bacilli, spirochetes, vibrios and cocci in the tissues.

With fusospirochetal material from the sputum, the gums or the tonsils of patients I have produced pulmonary abscesses in mice,[17] in guinea-pigs [17] and in rabbits.[18] They have been produced in rabbits by Kline [1b] and in dogs by Crowe and Scarff,[19] Allen,[20] Hedblom, Joannides and Rosenthal,[21] Harkavy,[22] Van Allen, Adams and Hrdina,[23] and Herrmann and Cutler.[24] This uniform series of successful experiments leaves little doubt that the fusospirochetal mixture is pathogenic, but it does not prove which organism or combination of organisms is responsible for the disease.

I have isolated the following organisms in pure culture from patients with fusospirochetal pulmonary abscesses: Treponema microdenteum, Treponema macrodenteum, Treponema buccale, Vibrio viridans, Bacterium melaninogenicum, Micrococcus gazogenes, a large fusiform bacillus, a small fusiform bacillus, alpha, beta and gamma strains of streptococci and the several types of staphylococci.[25] Cultures of Treponema vincenti and Spirillum sputigenum were grown in symbiosis with cocci but never isolated in pure culture. Some of these cultures were isolated from children and some from adults.

Several of the strains of streptococci produced fatal cellulitis and pneumonitis and some of the staphylococci initiated small, nonfetid abscesses, but none of the other organisms produced infection. Spirochetes, alone or mixed with fusiform bacilli, failed to infect mice, guinea-pigs or rabbits. Although the pure cultures

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failed to reproduce the disease, a mixture made from pure cultures of Treponema microdenteum, Vibrio viridans, a small fusiform bacillus and a beta hemolytic streptococcus produced a typically foul necrotic abscess, which could be transmitted to animals in series.[26] The spirochete is an essential element in this symbiosis and the disease could no longer be transmitted from animal to animal if the spirochete disappeared either spontaneously or as a result of arsenic therapy even though all the other organisms were present. Herrmann and Cutler [24] failed to produce chronic fetid abscesses in dogs with pure cultures of any one of the twelve types of organisms isolated from pulmonary abscesses but succeeded with a mixture of the anaerobic forms. The recent work of Proske [27] has confirmed and extended the evidence I [25] have obtained and that presented by Herrmann and Cutler, attesting that this disease is caused by a symbiosis of non-spore-bearing anaerobic organisms.

The source of this mixture of organisms which is responsible for the fusospirochetal type of abscess is generally the gums or the tonsils of the patient, although occasionally it may be contracted from another individual.[28]

MYCOTIC ABSCESS

In adults, abscess of the lung may be caused by any one of the organisms listed in the accompanying table. I have seen one child infected with sporothrix and one with actinomycetes. Proof of their relation to the disease rests primarily on the presence of the organism in the lesion and on certain immunologic and serologic reactions such as skin tests, agglutinations and complement fixations.

DIAGNOSIS

The history of a tonsillectomy or aspiration of a foreign body should at once direct the attention to the possibility of a fusospirochetal abscess, although in one previously reported case [2] the aspiration of an oat head was followed by an actinomycotic abscess of the lungs.

A child with the clinical signs and symptoms of pneumonia who has gingivitis or Vincent's infection of the tonsils may have a fusospirochetal abscess of the lungs. I have seen two such cases in infants in whom the treatment was delayed until the diagnosis was made by pleural tapping; both patients died.

The history, physical signs and x-ray shadows may be identical in cases of bacterial abscess, fusospirochetal abscess and mycotic abscess. The final diagnosis rests entirely on a study of the pulmonary secretions. Sputum is more difficult to obtain in children than in adults, and recourse to laryngeal swabbings, bronchoscopic drainage and pleural tapping may be necessary. Exploring the lung with a needle in search of an abscess is contraindicated because of the danger of producing empyema.

The common bacteria that produce lung abscess are easily cultivated on blood agar. The spore bearing anaerobes of the gas gangrene group may be demonstrated by the Gram stain and cultivated in tubes of meat or milk mediums sealed with sterile petrolatum or on the surface of blood agar plates incubated under anaerobic conditions.

The fusiform bacilli and the thicker spirochetes (Treponema buccale and Treponema vincenti) are readily demonstrated by staining a smear of the secretion with gentian violet or dilute carbolfuchsin. The finer spirochetes (Treponema microdenteum and Treponema macrodenteum) may be shown by the Fontana stain or by the darkfield apparatus. When chunks of purulent sputum can be obtained, the smears should be made from the pus in the center. If no large particles are found, it is difficult and at times impossible to learn whether the fusiform bacilli and spirochetes are from the lungs or merely contaminators from the mouth. In infants, I believe, it is wiser to assume that the organisms are from the lungs and to proceed with specific treatment.

Cells of the yeastlike and moldlike fungi may be found by direct microscopic examination after the material has been treated with a 10 per cent solution of sodium hydroxide. The higher bacterial forms may be found in fresh preparations as "sulphur granules" or demonstrated in stained smears as branching gram-positive rods and filaments. Some of the nocardia or streptothrix organisms are non-acid fast and some acid fast. Sometimes it is necessary to inoculate a guinea-pig to prove that these acid-fast forms are not atypical tubercle bacilli.

Fungous Diseases of the Lungs

I.	Yeastlike Fungi
1.	Saccharomyces
2.	Monilia
3.	Torula
4.	Endomyces
5.	Geotrichum (Oidium)
6.	Blastomyces
7.	Coccidioides immitis
8.	Sporothrix
II.	Moldlike Fungi
9.	Aspergillus
10.	Penicillium
11.	Mucor
III.	Higher Bacterial Forms
12.	Actinomyces
13.	Nocardia (*a*) acid fast, (*b*) nonacid fast

Often the greatest difficulty is encountered in distinguishing pulmonary abscess from (1) pulmonary tuberculosis, (2) encapsulated and interlobar empyema and (3) unresolved pneumonia, yet it is absolutely necessary to make a specific diagnosis if specific treatment is to be applied.

TREATMENT

The general supportive measures, such as rest in bed, forcing of fluids, high vitamin diet and postural drainage, can be applied equally well to all types of pulmonary abscess.

If the bacterial abscess is caused by an organism of the gas gangrene group, the patient should be treated with specific or polyvalent antigangrene serums. The acute staphylococcic abscesses might be treated with the new staphylococcus antitoxin, which I among others have found to be polyvalent and to protect rabbits against staphylococcus toxin formed by organisms isolated from different patients.[29] I have not as yet had an opportunity of treating a primary pulmonary infection with this antitoxin. Abscesses due to the other bacteria should be treated palliatively in the acute stage unless empyema develops. In the subacute stage postural drainage, bronchoscopic drainage and perhaps autogenous vaccine therapy is indicated. If the lesion persists for three months, it has reached the chronic

26. Smith, D. T.: Fusospirochetal Disease of the Lungs Produced with Cultures from Vincent's Angina, J. Infect. Dis. **46**: 303 (April) 1930.

27. Proske, H. O.: Pub. Health Rep., to be published.

28. Smith, D. T.: Relation of Vincent's Angina to Fusospirochetal Disease of the Lungs, J. A. M. A. **94**: 23 (Jan. 4) 1930.

29. This investigation has been conducted by Joyner, Rigdon and Hare and will soon appear in the literature.

stage and should be treated by open operation and drainage.

The fusospirochetal type of pulmonary abscess should be diagnosed and arsenic treatment started within the first two weeks of the disease if the best results are to be obtained. Either neoarsphenamine or sulpharsphenamine may be used in doses about one half as large as a similar child would require for syphilis, but repeated every three or four days up to six or eight doses. Bronchoscopy should be employed if postural drainage is not effective. Phrenicectomy is not advised, because of the danger of kinking the bronchus and stopping the drainage. Artificial pneumothorax is inadvisable for the same reason and because of the danger of causing the abscess to rupture into the pleura, initiating a severe if not fatal empyema. In cases in which the lesion persists for three months while the patient is receiving arsenic therapy, postural drainage and bronchoscopic treatment, the abscess is chronic and should be drained by open operation.

The mycotic abscesses of the lung should be treated by gradually increasing doses of potassium iodide. If the patient does not respond to this treatment, it should be supplemented by inhalations of ethyl iodide with an initial dose of from 0.5 cc. to 1 cc. once daily, gradually increased to 2 cc. three times daily. Vaccine therapy seems to be of value in some cases as a supplementary treatment.

SUMMARY

An effort should be made to determine the etiology of every case of pulmonary abscess occurring in children, because those initiated by the gas gangrene anaerobes can be treated with specific antitoxin serum, those due to the fusospirochetal organisms can be treated with neoarsphenamine or sulpharsphenamine, and those caused by fungi respond to potassium iodide or ethyl iodide therapy.

ABSTRACT OF DISCUSSION

DR. LOUIS H. CLERF, Philadelphia: Dr. Smith's presentation on pulmonary abscess in children has brought out some important points. Pulmonary abscess in children is more common than is generally realized. Many of the patients that I have seen were treated as cases of pneumonia for a considerable time. One wonders how many of the cases that recovered spontaneously from abscess were diagnosed as pneumonia. Although much of the experimental evidence indicates that abscess of the lung may be embolic in origin, I am of the opinion that aspiration plays a very important part. I have often marveled that one could indicate on the basis of physical examination and roentgen study that a single abscess in a given case was of embolic origin. To me clinical evidence supports aspiration. I agree with Dr. Smith that the designation "abscess" is preferable to pulmonary gangrene if the lesion consists of a localized collection of pus in a cavity formed by the disintegration of tissues. The term "gangrene" as commonly employed implies more than a localized process. The etiologic organism, so far as the production of an abscess is concerned, is obviously difficult to determine. In a majority of the cases observed by me a number of organisms were found. However, if one does a bronchoscopy early, before the area of pneumonitis has gone on to abscess formation, one may secure organisms in pure culture from the secretion removed. In four cases so examined a streptococcus was found in pure culture. Diagnosis of pulmonary abscess is difficult in the early stages at a time when treatment should be instituted if the best results are to be secured. A lesion localized to one lobe, occurring within a week or ten days after an operation, particularly tonsillectomy, is very probably a pneumonitis, which will either clear up spontaneously or go on to abscess formation. My concept of pulmonary abscess presupposes the existence of an inflammatory lesion that has broken down. I agree that arsenical treatment is of value in the fusospirochetal type of abscess and should be administered early if good results are to be secured. I consider it of little value in long standing cases. In my experience, operations, particularly those about the mouth and throat, have figured in approximately 70 per cent of the cases of pulmonary abscess that came under observation. A diagnostic bronchoscopy is indicated in all these cases unless there is a very definite contraindication. I believe that it is a mistake to delay until there is a definite abscess cavity with fluid level before one will make a diagnosis of pulmonary abscess and then consider appropriate treatment. Early bronchoscopy in a number of these cases of so-called pneumonitis, a pulmonary lesion which I believe precedes the formation of abscess, has been followed by prompt clearing of the lesion. If this is done, many potential cases of abscess will be cases of acute pneumonitis with spontaneous recovery.

DR. J. W. EPSTEIN, Cleveland: In our studies of pulmonary gangrene and pulmonary abscess at Mount Sinai Hospital we classified these conditions to conform with their clinical and pathologic characteristics. Dr. B. S. Kline, director of our laboratories, whose exhaustive studies and contributions on this subject are well known, is responsible for its terminology. The classification is as follows: 1. Embolic pulmonary abscess. 2. Bronchogenic pulmonary abscess. 3. Pulmonary gangrene. The embolic abscess occurs more frequently in infants and in children. These patients usually have a suppurative condition elsewhere in the body and their pulmonary lesion represents a manifestation of bacteremia. The bronchogenic pulmonary abscess is the type most frequently met in infants and children. By bronchogenic abscess we mean an area of suppuration in the lung caused by pyogenic organisms gaining access through the bronchus. They are therefore always aspiratory in character. Pulmonary gangrene is a distinct clinical entity and should not be confused with pulmonary abscess. Pyogenic organisms never produce gangrene, while the characteristic lesion caused by spirochetes, fusiform bacilli and vibrios is not abscess but gangrene. Pulmonary gangrene is much more frequent than pulmonary abscess and is six times as frequent in adults as in children. In our series of thirty-nine cases of pulmonary gangrene, only seven were in children. The number of cases of pulmonary gangrene in children and adults treated in our hospital in a comparatively short period of time is convincing evidence that this disease is not of rare occurrence, yet its apparent frequency is not properly reflected in the number of reports appearing in the medical literature. Heretofore, the total number of cases of pulmonary gangrene reported in the United States has hardly reached a few hundred as compared to thirty-nine cases observed in one hospital. The discrepancy between the number of cases reported and the number that actually occurred leads me to believe that there is a great deal of confusion regarding these two clinical entities and that many of the cases reported as pulmonary abscess from clinical and roentgenographic evidence, but not supplemented by study of sputum, were actually cases of pulmonary gangrene. I therefore feel that the term "pulmonary gangrene," not "pulmonary abscess," should be applied to lesions caused by spirochetal anaerobes.

DR. E. F. BUTLER, Elmira, N. Y.: This discussion is from the standpoint of the thoracic surgeon, who may eventually be called on to treat some of these cases. In my experience about 10 per cent of all cases of lung suppuration occur in children. Fortunately the prognosis is good as compared to cases occurring in adults. The pediatrician has an important rôle to play. It is true that not every case of respiratory infection requires elaborate diagnostic study. However, in cases of recurrent infection or infection that continues without improvement for two or more weeks there rests on the pediatrician an obligation to arrive at an accurate diagnosis of the underlying pathologic condition. There should be a complete review of the history of the case with special reference to previous operations or the possibility of foreign bodies; there should be a complete review of the physical observations with special reference to changes in the upper respiratory tract; the bacteriologic examination should be exhaustively studied, as set forth by Dr. Smith; roentgen examination should not only include an anteroposterior film of the chest but should also include

fluoroscopy and such lateral or oblique films as may be indicated; bronchoscopy is most valuable in these cases. Some men might be inclined to add exploratory aspiration as the next diagnostic step. Let it be emphatically stated that exploratory aspiration should not be performed in the presence of a suspected lung abscess or other pulmonary suppuration. There is no assurance that the aspirating needle will not traverse a clean defenseless pleural cavity and pave the way for a putrid empyema with an attendant mortality risk of from 75 to 90 per cent. There is no assurance that cellulitis of the chest wall may not result from such a procedure. It is safer to expose the diseased lung surgically and be assured of defensive pleural adhesions than to plunge a needle blindly through the chest wall. Therefore let it be said emphatically that the pediatrician or the general practitioner should not undertake exploratory aspiration under such conditions but should refer an uncomplicated case to a qualified thoracic surgeon.

DR. DAVID T. SMITH, Durham, N. C.: I agree with all the discussers in detail, except perhaps with the terminology used by Dr. Epstein. I don't think it makes a particle of difference whether one wants to designate this peculiar type of abscess as a fusospirochetal abscess or as gangrene, as long as one knows what one is talking about. He prefers the term gangrene and there is a lot to be said for this view. I prefer the term abscess, and whether there is much to be said for it or not, it does not matter, as long as one recognizes that this is a particular type of infection. If diagnosed sufficiently early, it will respond to arsenical treatment.

CYCLOPROPANE ANESTHESIA

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A new inhalation anesthetic agent is presented. To justify such a contribution, the drug must have advantages over the drugs in current use. We propose in this paper to present the results of a twelve months clinical study of cyclopropane, including over 2,000 clinical administrations, leaving the reader to judge whether the evidence warrants acceptance of this agent as an addition to the present therapeutic armamentarium.

John Snow was the first member of the medical profession to devote his attention to anesthesia. He was the first to appreciate the disadvantages as well as the advantages of ether as an anesthetic agent and he called attention to the unpleasant induction and recovery, difficulty of technic of administration and the irritation of the respiratory tract by that drug. He called attention to the safety of ether in comparison with chloroform through the improbability of causing primary cardiac damage by its use. Search for a drug that would not injure the heart but possessing the anesthetic properties characteristic of chloroform led him to study various hydrocarbons. One, amylene (C_5H_{10}), he administered to 238 patients. Although Snow appreciated the physiologic importance of oxygen, it was not available in his time as a vehicle or adjuvant to narcotic drugs. His experience with gaseous hydrocarbons was therefore limited. Since the death of Snow (1858), many such gases have been studied. In this country, ethylene (C_2H_4) alone has stood the test of time. Its usefulness has been limited, however, because of the lack of potency in concentrations that do not produce oxygen want.

In the search for new inhalation agents, propylene ($CH_3.CH:CH_2$) received extensive study. Electrocardiographic observations[1] showed certain cardiac irregularities and arrhythmias that seemed to condemn it for anesthetic purposes. Searching for the cause of cardiac damage in propylene anesthesia, Lucas and Henderson studied a possible contaminant or impurity, its isomer cyclopropane. This agent proved not to be the factor causing cardiac damage but to be a more potent anesthetic agent than propylene, causing very little change in the physiologic processes of laboratory animals. In addition, they found cyclopropane rapid in action, pleasant to inhale, of slight toxicity in effective concentrations, and susceptible of being rapidly eliminated.

A preliminary report on the first clinical application of cyclopropane was made by the Department of Anesthesia of the University of Wisconsin in October 1933.[2] Studies of the effects of this agent on various functions of animals have been reported from the laboratories of the University of Wisconsin Medical School.[3] In the present communication are summarized the clinical results from a year's routine use of cyclopropane in the various surgical services of the Wisconsin General Hospital, in comparison with ethylene on the one hand and ethyl ether on the other. The results of certain detailed studies of physical characteristics as well as physiologic effects are included, with a view to anticipating the reader's questions as completely as possible. All administrations included in the report were made by members of the anesthesia staff, graduates in medicine in various stages of training, ranging from interns serving one month in anesthesia through residents in the service for three year periods, and including the chief of the service.

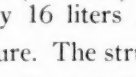
The technic of administration used, with the exceptions noted, has been that known as the carbon dioxide absorption technic.[4] A closed extension of the respiratory tract is obtained by means of a mask, canister of soda lime granules, and breathing bag. Expired carbon dioxide is retained in the soda lime in the form of a carbonate. The oxygen used from the anesthetic mixture, filling such an enlarged respiratory system, is replaced by a constant metered flow of oxygen, approximately equal in quantity to that utilized by the patient. When endotracheal airways were used, they were sufficiently large to accommodate "to-and-fro" breathing[5] and were connected directly to the soda lime canister, thus replacing the face mask.

PREPARATION; PHYSICAL PROPERTIES

The simplest cyclic hydrocarbon — cyclopropane or trimethylene—was first prepared by the chemist Freund[6] in 1882. No use was found for the agent and little concerning cyclopropane appears in the chemical or other literature until 1929, when Henderson and Lucas[7] published their studies. The method used in preparation has been the reduction of an alcoholic solution of

From the University of Wisconsin Medical School.

1. Caine, A. M., and Reynolds, C.: Electrocardiographic Studies of the Action of Propylene and Some Other Anesthetic Gases, Proc. Soc. Exper. Biol. & Med. **23**: 488 (March) 1926.
2. Stiles, J. A.; Neff, W. B.; Rovenstine, E. A., and Waters, R. M.: Cyclopropane as an Anesthetic Agent: A Preliminary Clinical Report, Anesth. & Analg. **13**: 56 (March-April) 1934.
3. Seevers, M. H.; Meek, W. J.; Rovenstine, E. A., and Stiles, J. A.: A Study of Cyclopropane Anesthesia, with Especial Reference to Gas Concentrations, Respiratory and Electrocardiographic Changes, J. Pharmacol. & Exper. Therap. **51**: 1 (May) 1934.
4. Waters, R. M.: Carbon Dioxide Absorption from Anesthetic Mixtures, California & West. Med. **35**: 342 (Nov.) 1931.
5. Guedel, A. E., and Waters, R. M.: Endotracheal Anesthesia: A New Technic, Ann. Otol., Rhin. & Laryng. **11**: 1139 (Dec.) 1931.
6. von Freund, August: Ueber Trimethylene, Monatsh. f. Chemie **3**: 625 (July 13) 1882.
7. Lucas, G. H. W., and Henderson, V. E.: A New Anesthetic Gas: Cyclopropane, Canad. M. A. J. **21**: 173 (Aug.) 1929. Henderson, V. E., and Lucas, G. H. W.: Cyclopropane: A New Anesthetic, Anesth. & Analg. **9**: 1 (Jan.-Feb.) 1930; The Effect of Cyclopropane on Metabolism, Arch. internat. de pharmacod. et de therap. **37**: 155, 1930.

trimethylene bromide in the presence of metallic zinc. The Ohio Chemical and Manufacturing Company has prepared the cyclopropane used as a basis for this report. As with the preparation of other hydrocarbons, purification of the product is important. The supply furnished the University of Wisconsin during the past year has been uniform and has remained stable while stored in steel cylinders for a period of twelve months, and no evidence of impurity has been observed. The containers caused some embarrassment at first because valve packing of the sort used in storage of ethylene and nitrous oxide was not efficient in forming a leak-tight closure of the cylinders. During the last nine months we have had no difficulty with leaking valves. The gas is liquefied at a pressure of 75 pounds per square inch. It is heavier than air (specific gravity 1.46) and the molecular weight is 42.05. Twenty-eight grams (1 ounce) of the agent is equivalent to approximately 16 liters (4¼ gallons) of gas at atmospheric pressure. The structural formula is  . According to Henderson and Lucas, it is practically insoluble in water but very soluble in lipoids, having a water-oil ratio of about 1 : 65. It is an inflammable agent, capable, in our experience, of exploding when mixed with oxygen, in concentrations as low as 3.8 per cent.[8] Cyclopropane, ether and ethylene all form explosive mixtures with air and oxygen, making it necessary to take precautions against fire hazards when using one of these agents. Anesthetic mixtures are quite as likely to come in contact with the cautery, electric sparks from motors, and other sources of ignition, at varying distances from the mask or apparatus as they are to be exposed to such sources within the mask or breathing bag. Knowledge of the exact flash point, therefore, in the case of a given agent is of little importance. Unlike ethylene, which is somewhat lighter, cyclopropane and ether are heavier than air, and the precautions necessary for safety when using them are similar.

Cyclopropane is diffusible through rubber, as are ethylene, carbon dioxide and nitrous oxide.[9] An 8 liter rubber breathing bag, filled to capacity without pressure and containing by analysis 92.8 per cent of cyclopropane, 1.3 per cent of oxygen and 5.7 per cent of undetermined gas, after four hours and forty-five minutes was found to contain much less gas, and analysis showed 85.6 per cent of cyclopropane, 4.66 per cent of oxygen and 8.7 per cent undetermined. Eighteen hours and forty-five minutes after filling, analysis showed 60.0 per cent of cyclopropane, 13.8 per cent of oxygen and 26.4 per cent undetermined. The weight of such a bag filled with the gas decreased at a rate of 0.0876 Gm. per hour, or 4.2 Gm. in forty-eight hours. A bag placed over a frame to prevent collapse and attached to a water manometer reached a negative pressure of 24 cm. of water in thirty hours, the negative pressure then decreasing slowly for several days. The rapidity of escape of cyclopropane through the skin during anesthesia has not been compared with other agents.[10]

EFFECTIVE CONCENTRATIONS

Cyclopropane is capable of producing narcosis when inhaled in a concentration as low as 4 per cent. Even lower concentrations have maintained a light degree of anesthesia in patients who have received richer mixtures during the early stages of administration. It is therefore evident that anesthesia may be effected by inhalation of this agent with air as a vehicle. Insufflation into the pharynx of cyclopropane at a rate of from 200 to 800 cc. per minute has maintained satisfactory anesthesia for abdominal surgery in the few cases in which it has been tried. The carbon dioxide absorption technic described has proved more satisfactory. With this technic, gas analyses have been made of the mask concentration coincident with various degrees of narcosis. For preanesthetic medication in all cases studied, morphine from 0.008 to 0.016 Gm. (⅛ to ¼ grain) and scopolamine from 0.00032 to 0.00065 Gm. (1/200 to 1/100 grain) was administered hypodermically about one and one-half hours before induction.[11] Forty-six cases have been selected from this group for graphic compilation (fig. 1), in which a definite statement was possible as to the plane of anesthesia.[12] at the time of sampling and in which no change in the mixture had been made for five or more minutes. The graphs show concentrations of cyclopropane found by analysis of the mask contents for each degree of narcosis. In the upper circles are shown the maximum percentages found in any one sample, in the lower circles the minimum, and averages for all analyses in the large circles. Determination of oxygen and carbon dioxide was also made. The oxygen figures are included in the graphs. It will be seen that the average concentration of cyclopropane for first plane, third stage anesthesia (roving eyeball) was 7.4 per cent, while second plane (fixed eyeball, sufficient for a majority of abdominal operations) required an average of 13.1 per cent, and third plane, with intercostal paralysis, required an average of 23.3 per cent. In our experience, the fourth plane, as noted later, cannot be separated from the third. Fourth stage anesthesia, or respiratory arrest, was produced with an average concentration of 42.9 per cent. When produced in the presence of high oxygen concentrations, such respiratory arrest has not been found to cause harm provided ample tidal exchange is artificially maintained.

It will be noted in the graphs that oxygen always exceeded 20 per cent. The intention in each case was to fill the respiratory spaces with a cyclopropane-oxygen mixture. Since the maximum carbon dioxide content of any sample was less than 4 per cent, it will be seen that a residue of nitrogen was present in every sample in quantity varying over a wide range. This nitrogen was derived in part from the air present in the patient's air passages when the mask was originally applied and in part from the desaturation of the patient's tissues and blood during anesthesia. This fact must be kept constantly in mind and care taken to maintain an oxygen content of decidedly more than 20 per cent.

TECHNIC OF ADMINISTRATION

Before we adopted the present technic, our tendency was to use too high a concentration of cyclopropane. This difficulty undoubtedly rose from our familiarity with nitrous oxide and ethylene, which require a concentration exceeding 75 per cent to be effective. The

8. We regret that, in a previous communication[2] from this institution, a table of explosive ranges was published which gave incorrect figures.

9. Wineland, A. J., and Waters, R. M.: The Diffusibility of Anesthetic Gases Through Rubber, Anesth. & Analg. **8**: 322 (Sept.-Oct.) 1929.

10. Orcutt, F. S., and Waters, R. M.: The Diffusion of Nitrous Oxide, Ethylene and Carbon Dioxide Through Human Skin During Anesthesia, Including a New Method for Estimating Nitrous Oxide in Low Concentrations, Anesth. & Analg. **12**: 45 (Jan.-Feb.) 1933.

11. Seevers, Meek, Rovenstine and Stiles[3] compared a group of dogs that had received similar premedication with a group uninfluenced by nonvolatile agents. They found an average difference in concentration of cyclopropane necessary to maintain a given degree of narcosis of about 12 per cent. For example, if 18 per cent cyclopropane maintained first plane third stage anesthesia in a dog without premedication, it required only 6 per cent to accomplish a similar result after premedication with morphine and scopolamine. There would appear to be a similar difference in dosage in patients.

12. Classification of degrees of narcosis used is that of Guedel (Anesth. & Analg. **6**: 157 [Aug.] 1927).

method for satisfactory use of the completely closed carbon dioxide absorption technic is as follows: Administration is begun with a very rapid flow of oxygen (8 or 10 liters per minute) into the mask as it is placed on the patient's face and continued until the mask, canister and bag are sufficiently filled to accommodate completely the patient's tidal excursion. At the same time, cyclopropane is introduced at a rate of 600 or 700 cc. per minute in average cases and continued for from thirty seconds to two or three minutes. The addition of cyclopropane is then stopped completely. An interval of several minutes must intervene before complete distribution to the tissues takes place and maximum narcotic effects result. In certain resistant individuals it may be necessary to give the gas for a few seconds at a more rapid rate, and in some very susceptible ones, or those heavily dosed with nonvolatile agents, a slower flow during induction is indicated.

During the period of maintenance, a constant slow flow of oxygen should be added, approximating as nearly as possible the metabolic demand of the patient. This usually varies between 250 and 400 cc. per minute. An air-tight contact of the mask on the face simplifies maintenance of smooth anesthesia. A few minutes of observation usually suffices to determine the optimal constant flow of oxygen for a given patient. If physical signs indicate that the degree of narcosis resulting from the mixture originally used to fill the mask, canister and bag is insufficient, the flow of cyclopropane may be resumed for a time sufficient to enrich the mixture properly. If, on the other hand, the degree of narcosis is too profound as evidenced by physical signs, a rapid addition of oxygen for a brief period will reduce the potency of the mixture inhaled. The necessity for maintenance of unobstructed respiration is quite as important as with other agents. Pharyngeal airways are frequently used for this purpose.

PHYSICAL SIGNS

In general, the physical signs used in ether anesthesia, to determine the degree of narcosis present, are applicable. Cyclopropane, however, possesses two properties that are responsible for definite differences in physical signs and necessitate quite different interpretations from those commonly accepted for the older anesthetic agents.

First, although a gas like nitrous oxide and ethylene, cyclopropane is of the potency of chloroform and ether, but without their irritant qualities. Consequently, an extremely high concentration can be inhaled without producing laryngospasm, the normal physiologic protection from a sudden and extreme increase in dosage. Lacking this protection, the anesthetist experienced in the use of nitrous oxide or ethylene must guard against rushing the patient rapidly from one degree of narcosis to another and not allowing sufficient time for circulatory distribution and maximum effect of one concentration with full development of the physical signs characteristic of that dose. Second, cyclopropane is not a respiratory stimulant. As commonly administered, ether, nitrous oxide and ethylene, on the other hand, always tend to produce an initial increase in rate and minute volume respiration, up to the point at which the depression of an overdose or of oxygen want supervenes. In other words, they must be administered to a point of very large dosage before the respiratory rate and the minute volume decrease to normal. Cyclopropane, if administered with oxygen as a vehicle and without carbon dioxide excess, may result in no change in respiratory rate or minute volume until depressive doses are reached. The high oxygen concentration used may even result in reduced minute volume in the early stages of administration.

The disappearance of the lid reflex, which has been used since Snow's time to determine the degree of narcosis below which there is no pain perception, is reliable. Complete extra-ocular paralysis, with cessation of movement of the eyeball and fixation in a "looking forward" position, was at first thought to occur relatively later than with ether. We are now inclined to believe that the better skeletal muscle relaxation due to better oxygenation in the first plane accounts for our early misinterpretation of this sign. With increasing experience, our reliance on the physical signs commonly used has increased. We are still unable, however, to discriminate between the third and fourth planes of third stage anesthesia. The patient in the first plane shows retained extra-ocular muscle activity. As the narcosis deepens and he reaches the second plane, movement of the eyeball ceases but both the diaphragm and intercostal

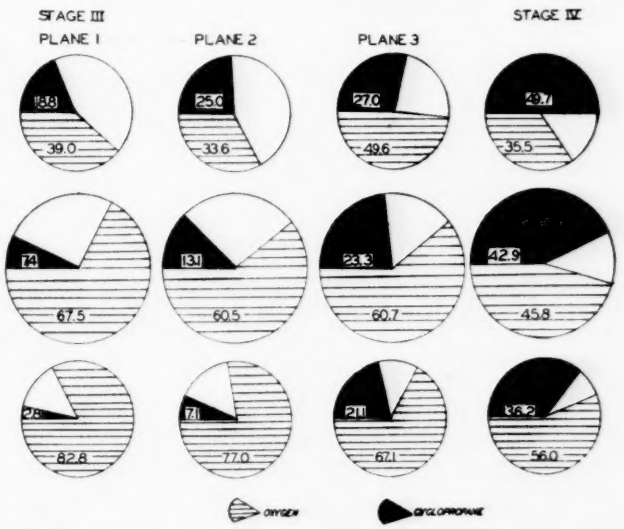


Fig. 1.—Gas analyses of mask samples from forty-six cases taken during the various planes of surgical anesthesia and during the fourth stage (respiratory arrest). Upper circles show maximum cyclopropane concentration, lower circles show minimum, and large circles show the average percentage for each degree of narcosis.

muscles maintain their normal share of the load of respiration. As the depth of anesthesia increases still further, intercostal activity lessens, is delayed, and finally ceases as the patient passes into the third plane, characterized by diaphragmatic breathing only. Diaphragmatic breathing in plane 3, however, is not exaggerated during cyclopropane anesthesia as it is with ether. While the patient is passing down through this plane, depression simply increases until complete respiratory paralysis is reached, without evidence of a change from the third into the fourth plane. When respiration ceases, the patient, of course, may be considered in fourth stage narcosis.

PREMEDICATION

Our present attitude toward premedication with nonvolatile agents in relation to cyclopropane is that respiratory depression by such drugs is to be avoided. Barbituric acid derivatives, tribrom-ethanol, opium derivatives, and certain other drugs commonly used in preliminary medication all tend to depress respiration and decrease minute volume exchange. Our best results

have been obtained by decreasing the dose of the opium derivative generally used before other agents by at least one half, while retaining the full customary dosage of scopolamine and giving them together about one and one-half hours preoperatively. This premedication would be entirely inadequate for ethylene or nitrous oxide administration. In the few cases in which anesthesia was induced with no premedication, the anesthesia was quite satisfactory although requiring a higher concentration for induction. A surprisingly slight stimulation of the salivary glands may be expected in such cases.

DANGER SIGNS

The pupils dilate sluggishly in morphinized patients and the sign is of little value. Color cannot be used as an indication of the degree of narcosis or of danger, because an excess of oxygen should be present and the patient decidedly pink at all times. The most valuable signs, warning that the limit of tolerance has been reached, are changes in the character of the pulse. Arrhythmia, slowing of the rate to 50 and less, or a definite increase in rate demands a reduction in gas concentration by the addition of a considerable quantity of oxygen. Inflation of the lungs with oxygen is indicated if such pulse changes occur when respiration is decidedly depressed.[13] To the anesthetist experienced with other drugs, the addition of carbon dioxide is apparently indicated. However, we believe that carbon dioxide additions are definitely contraindicated. Instead, simple reduction of anesthetic concentrations should be practiced. When in doubt as to depth of narcosis, one should always add oxygen in cyclopropane anesthesia. The beginner's mistakes will always be in the direction of overdosage. Although the average concentration causing respiratory paralysis is 42.9 per cent, extreme respiratory depression may occur with as low a concentration as 21 per cent (fig. 1). It is scarcely conceivable that warning of impending cessation of breathing would not be taken from gradually increasing depression, unless a large quantity of the gas was suddenly added to the respiratory system either through lack of familiarity with the agent or by accident. Exception to this statement might be made in case of too large a dosage of a preanesthetic medicament and considerable respiratory depression before the mask was applied. Under such circumstances the induction should be conducted with a weak mixture of the gas. If the rule is always observed of maintaining a high oxygen content in the atmosphere inhaled, the advent of respiratory arrest need not cause alarm, since one or two inflations of the chest with oxygen or with a weaker mixture will always reestablish respiration. Removal of the mask without artificial respiration, in dogs, has many times resulted in spontaneous breathing and rapid recovery without untoward effects.

ABSORPTION AND ELIMINATION

The odor of pure cyclopropane is neither unpleasant nor irritating to the upper respiratory mucosa even in concentrations stronger than needed for anesthesia. Laryngospasm may result from extremely high percentages. It is evident, therefore, that the administration of a mixture containing 50 per cent of the gas might be accepted by a patient without coughing or holding the breath. Such an induction in dogs has resulted in anesthesia in a very few breaths, quickly followed by respiratory arrest. Seevers, De Fazio and Evans[14] have compared the rate of absorption and elimination of cyclopropane with ethylene and find the former more rapid. The apparent slowness of induction seen in the technic described is explained by the very gradual increase in concentrations recommended. Such an induction we feel to be safer than a more rapid one when using an extremely potent agent. Gas analyses of gastric, peritoneal and subcutaneous gas pockets in animals have been found to contain increasing concentrations of cyclopropane as anesthesia is prolonged, approaching but not reaching, in the periods of anesthesia, the concentrations inhaled.

After administration, it is evident that desaturation of the body cavities as well as the tissues must take place over a considerable time. Gas analyses of gradually increasing low concentrations inhaled for the purpose of determining the minimum effective percentages lead us to believe that a normal individual is not affected by less than 3.5 per cent. The lowest concentration found in the mask during operation has been 3.8 per cent. If the mask is suddenly removed while the patient is inhaling a full anesthetic concentration of cyclopropane, he will sometimes pass through a period of excitation, whereas a gradual decrease in the concentration toward the end of an operation will result in a more nearly normal awakening. Gas analyses of pharyngeal samples of atmosphere taken at the height of expiration, and just following such an awakening, have shown a cyclopropane concentration of less than 1 per cent, gradually decreasing to traces during the following one to three hours. Although we prefer a gradual decrease in concentration during the last minutes of operation, elimination may be hastened following the removal of the mask by the display of sufficient carbon dioxide to maintain a brief hyperpnea.

CLINICAL LABORATORY STUDIES

Certain cases were studied to determine the changes in blood chemistry brought about by cyclopropane anesthesia. Although many more cases were observed than are used to compile the graph (fig. 2), we believe that the twenty-one cases there represented were the only ones in which the effects were produced solely by anesthesia and operation. No cases were omitted because of the seriousness or length of the operation. However, since oxygen want is known to cause changes in blood chemistry, cases that had shown severe respiratory obstruction during anesthesia have been omitted as well as others in which oxygen concentrations had been low because of technical error. Some cases were omitted because of the necessity having arisen during operation for intravenous medication. In the graph are shown average determinations for carbon dioxide combining power, sugar and nonprotein nitrogen, before, at the end of, and four hours after anesthesia. The maximum and minimum readings in each item are not shown because they are approximately similar to the averages. In one exception a patient showed a rise of blood sugar content to 167 mg. per hundred cubic centimeters of blood without demonstrable cause other than the anesthetic. No patients with diabetes were studied. Four cases were studied for blood phosphorus changes, showing a marked increase and a quick return to normal. When these figures for phosphorus are

13. It should be noted, however, that the pulse rate is not usually increased by cyclopropane and that the rate in a normal individual with moderate premedication and anesthetized with this agent by the carbon dioxide absorption technic is between 60 and 70 per minute.

14. Seevers, M. H.; De Fazio, S. F. and Evans, S. M.: A Comparative Study of Cyclopropane and Ethylene with Reference to the Rate of Body Saturation and Desaturation, to be published.

compared with the study of phosphorus during anesthesia by Stehle and Bourne,[15] the marked mobilization of phosphorus at the end of anesthesia would indicate a similar effect to that found by the McGill workers; namely, an increased liberation of phosphorus from the muscles. Studies of the effect of cyclopropane on kidney and liver function have been limited. Clinical results, other than nausea and emesis, have not suggested, however, that serious disturbance of either occurs. Kidney output is depressed or an actual suppression occurs during anesthesia with a compensatory increased excretion several hours following anesthesia. In this respect the effect is similar to that caused by ether and ethylene and not more marked.

The amount of bleeding from the capillary bed during operation is of interest to the surgeon and difficult to evaluate. Every new agent is subject to criticism from this angle. Some work has been done showing that other factors such as oxygen or carbon dioxide content of the blood are more important than the anesthetic agent in influencing wound bleeding. Of nine surgeons working in a routine manner with cyclopropane at Wisconsin General Hospital during the past year, one is positive that more wound bleeding occurs. No such comment has been offered from the other eight. On several occasions the comment from the one source has been offered that bleeding was excessive when the agent was ether or nitrous oxide but believed to be cyclopropane. Observations of coagulation time before, during the second half hour of cyclopropane anesthesia, and one hour following have been made by the capillary tube method. No significant change was noted in twenty-one cases observed.

Erythrocyte counts have been made before, during and after cyclopropane anesthesia. Little change in the number of red cells was noted. As with ether and other inhalation agents,[16] a marked leukocytosis occurs, the maximum change being found from the third to the sixth hour after operation. In the average case this increase is from two to three times the preoperative count. Twenty-four hours postoperatively the white blood count has returned to one-half the maximum, and a normal count is usually reached on the third or fourth postoperative day. There is always a distinct increase in polymorphonuclear cells in the differential count, with a slower return to normal than that occurring with the total number of leukocytes.

ELECTROCARDIOGRAPHY

Five clinical cases have been studied satisfactorily during cyclopropane anesthesia. Celiotomy of more than one hour duration was the operative procedure in each case. Electrocardiographic tracings were secured before anesthesia, during induction and every five to twenty minutes throughout the operation. Anesthesia was carried to plane 3 in three of the cases, and to stage IV in the other two. Four of the patients showed no electrocardiographic changes from normal other than a moderate slowing of the heart rate. In a single case during a two hour pelvic operation, significant changes were noted. During induction of anesthesia there was evidence of transient heart block in lead II. The next tracings fifteen minutes later were normal. After one and one-half hours operating, and with stage IV anesthesia, the tracing showed an inverted diphasic p wave and a shortened p-r interval. Ventricular extrasystoles were noted. From observing these five cases, one would be led to the impression that electrocardiographic changes during cyclopropane anesthesia were certainly no more evident than changes during a corresponding degree of narcosis with any commonly used agent. A comparative clinical study of cyclopropane and other agents is in progress.

Since the clinical study is incomplete at this time, we take the liberty of commenting from a publication by Seevers, Meek, Rovenstine and Stiles.[3] They observed electrocardiographic changes in unmorphinized dogs anesthetized with cyclopropane. Three dogs carried to complete respiratory arrest showed no changes during and following varying periods without artificial respiration. One dog spontaneously resumed normal respiration at the end of six minutes and the other two after shorter intervals. Experimental arrangements were then made to maintain artificial respiration in intubated dogs over long periods, gradually increasing the concentration of cyclopropane in, as nearly as possible, a pure

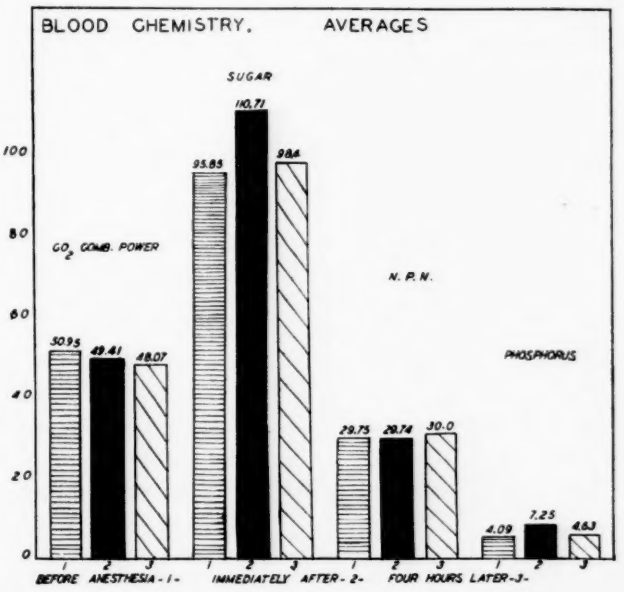


Fig. 2.—Average determinations of carbon dioxide combining power, sugar, nonprotein nitrogen and phosphorus in the blood taken from patients 1 before, 2 at the end of, and 3 four hours after operation under cyclopropane anesthesia.

oxygen vehicle. The dogs were allowed to reach either extreme respiratory depression or arrest and then respiration was continued by rhythmic compression of the breathing bag. Gas samples were taken in fourteen cases at the first appearance of electrocardiographic change (arrhythmia). The lowest concentration of cyclopropane was 26.6 per cent and the highest 72 per cent, with an average of 46.8 per cent. All fourteen dogs recovered normal electrocardiographic records in very short periods (from thirty seconds to two minutes) following artificial respiration with pure oxygen. Two other dogs died with ventricular fibrillation, occurring after short runs of ventricular extrasystoles and tachycardia. Gas analysis of the sample in one showed cyclopropane 71.4 per cent, and oxygen 17.7 per cent; in the other cyclopropane 52.0 per cent and oxygen 33.9 per cent. Artificial respiration did not effect recovery. A morphinized dog showed ventricular extrasystoles and ventricular rhythm on concentrations of cyclopropane under 30 per cent. After a 2 mg. dose of atropine sulphate, arrhythmia ceased. Artificial respiration was maintained thereafter while the concentration

15. Stehle, R., and Bourne, W.: The Excretion of Phosphoric Acid During Anesthesia, J. A. M. A. **83**: 117 (July) 1924.
16. Meleny, F. L.: A Study of Pre- and Postoperative Blood Counts in Noninfectious Surgical Conditions, Ann. Surg. **67**: 129 (Feb.) 1918.

was continuously raised until 72 per cent was reached without return of the arrhythmia.

Slowing of the pulse rate seen preceding arrhythmia might indicate a vagal effect. The type of early arrhythmia is usually nodal rhythm or ventricular extrasystole. There may be a partial or complete auriculoventricular heart block. Later effects consist in ventricular tachycardia and auricular and ventricular fibrillation.

STATISTICAL ANALYSIS OF CLINICAL CASES

Advantage has been taken of the routine records kept by the anesthesia department of the Wisconsin General Hospital consisting of, first, preoperative observations taken from the clinical record and supplemented by the anesthetist's preoperative visit; second, the condition of the patient recorded by the anesthetist from minute to minute during anesthesia and operation as shown by blood pressure, pulse, degree of narcosis and other data; and, third, a postoperative record completed from a combination of the result of a personal visit by the

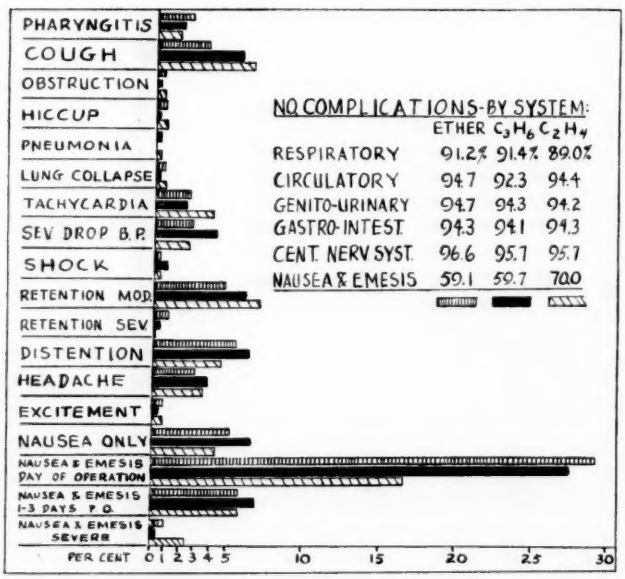


Fig. 3.—Postoperative morbidity following 600 cases each of anesthesia with ether, cyclopropane and ethylene for extra-abdominal surgery. The table shows, by systems, the percentage showing no complications. The graph represents the percentage incidence of each complication.

anesthetist from the third to the fifth postoperative day with inspection of the bedside record at this time, and checked by a review of the clinical chart at the time of discharge or death. Finally, the completed anesthesia record is transferred to a punch card, which is then available for machine sorting in the compilation of statistical data.[17] Thus the comparative information concerning ether, cyclopropane and ethylene recorded in the accompanying graphs is taken from the routine records of the hospital and does not involve special observations made because of this study.

In the extra-abdominal group, a series of 600 operations with ether anesthesia are compared with a similar number with cyclopropane and ethylene. Ether having been our previous choice for abdominal operations, 400 such operatons done with this agent are compared with 400 similar operations under cyclopropane. This affords a comparison of cyclopropane with the older agents ether and ethylene. Nitrous oxide has not been included because this agent is so lacking in potency without oxygen want as to afford little basis for comparison. When a very light degree of narcosis is desired, we prefer nitrous oxide and will continue to use it for the very reason that deep narcosis is impossible. The same group of surgeons working in the same hospital with the same anesthesia personnel, during the same period of time and with similar patients as to risk and type of operation, should make the comparisons fair even though the total number of cases is not great. The cyclopropane cases were selected at random from the total series administered, including those done early before experience had determined the most satisfactory technic or taught the character of the agent.

EXTRA-ABDOMINAL GROUP

Although cyclopropane has been used with satisfaction for thoracic surgery, eye surgery, obstetrics, operations on the mammary gland and the thyroid gland, genito-urinary surgery and tonsillectomies, all these are excluded because one or the other of the agents compared is thought to be contraindicated for such operations. The series includes central nervous system, bone and joint, plastic, vaginal and rectal surgery, hernias and miscellaneous general surgery outside the abdominal cavity.

The preoperative condition of these patients was similar in the three groups. For example, coughing was present in 3 per cent of the ether, 4.5 per cent of the cyclopropane and 4.1 per cent of the ethylene cases. Chronic pharyngitis was diagnosed in more than 11 per cent of each group, and oral sepsis in from 20 to 26 per cent of all the cases. The circulatory abnormalities were not less frequent than is expected in a hospital treating charity patients almost exclusively. Myocardial degeneration was a factor in 3.4 per cent of the ether, 7.8 per cent of the cyclopropane and 2.8 per cent of the ethylene cases. Arteriosclerosis averaged about 10 per cent, and patients with a functional capacity of grade II-A or less constituted 1.8 per cent of the ether, 4.1 per cent of the cyclopropane and 2.3 per cent of the ethylene cases. A nonprotein nitrogen of more than 40 was present preoperatively in 1.9 per cent of the ether, 3.5 per cent of the cyclopropane and 4 per cent of the ethylene cases. Fifty-seven of the 1,800 patients, equally divided for the agent, had brain or spinal cord lesions. More than 5 per cent of each group complained of headache, and a malignant condition was noted in 4.67 per cent of the ether, 5.3 per cent of the cyclopropane and 4.5 per cent of the ethylene cases.

During operation the complications in this series were practically nil except for surgical shock. In 2 per cent of the ether, 1.8 per cent of the cyclopropane and 2.2 per cent of the ethylene cases, third degree circulatory depression developed during operation. Pulse rate and systolic and diastolic blood pressures have been recorded throughout all anesthesia. No distinct differences were noted, and changes appear to have depended more on bleeding, operative manipulation and anesthetic technic than on the agent used. The respiratory rate was slower in the cases in which cyclopropane was administered.

Postoperative complications graphically represented in figure 3 include all the complications recorded in the nurse's notes and staff progress notes, as well as those gleaned from a personal visit to the patient. Many patients had more than one complication, and in a large number the postoperative complication was present preoperatively. Not every minor complication is included.

17. Rovenstine, E. A.: A Method of Combining Anesthetic and Surgical Records for Statistical Purposes, Anesth. & Analg. **13**: 122 (May-June) 1934.

and instances of a single occurrence are not recorded. For example, phlebitis was noted once in the 1,800 anesthesias.

ABDOMINAL GROUP

In the abdominal group the type of operation was about equally divided between the upper and lower parts of the abdomen for the 400 ether and 400 cyclopropane cases. Herniorrhaphy was included in the extra-abdominal group.

Preoperative complications in this group were more extensive. The respiratory and circulatory systems presented about the same percentage of preoperative

Deaths Occurring in 2,600 Cases

	Extra-Abdominal Cases			Abdominal Cases	
	Ether	Cyclo-propane	Ethylene	Ether	Cyclo-propane
Number of cases	600	600	600	400	400
Total deaths	23	13	22	27	27
Mortality, per cent	3.83	2.16	3.66	6.75	6.75
Time of death					
Day of operation	1	1	1	2	1
1-3 days after operation	4	4	1	5	3
4-7 days after operation	1	2	5	8	6
Second week	2	2	4	6	6
Later	15	4	11	6	11
Cause of death					
Pneumonia	5	0	4	6	4
Other respiratory diseases	0	0	1	2	0
Hemorrhage	0	1	0	1	2
Other circulatory diseases	3	5	2	4	4
Toxemia	9	1	9	7	10
Carcinoma	3	4	4	5	4
Shock	0	0	0	1	1
Others	3	2	2	1	2

complications. There were fewer central nervous system abnormalities. Intestinal obstruction was present in 5.2 per cent of the ether and 7.5 per cent of the cyclopropane cases. Nausea and emesis before operation was present in 15.8 per cent of the former and 17 per cent of the latter. A malignant condition was diagnosed in approximately 12.5 per cent of each.

During operation, complications were rare. Emesis occurred during operation in 1 per cent of the ether and 0.5 per cent of the cyclopropane cases. Shock developed in 1.7 per cent of the ether anesthesias and in 2 per cent of the cyclopropane anesthesias. As in the extra-abdominal group, no significant differences in pulse rate or blood pressure were noted. Respiratory excursion was definitely less in patients receiving cyclopropane, often adding considerably to the convenience of the surgeon.

Postoperative complications, graphically recorded in figure 4, were determined in the same manner as described for the extra-abdominal group. All complications were included, even though they were present before operation. Many patients had several complications.

It will be seen from a careful perusal of figures 3 and 4 that nausea and emesis following anesthesia for operations outside the abdominal cavity was similar to that following ether and distinctly more frequent than following ethylene, although distinctly less severe. Following abdominal operations, nausea and emesis was less frequent and less severe than after ether. Pneumonia did not occur after cyclopropane in the extra-abdominal group, and massive collapse was less frequent. The incidence of pneumonia following abdominal operations under cyclopropane was less than one-third that after ether. Lung collapse was also distinctly less frequent. Tachycardia, a severe drop in blood pressure or shock occurred distinctly more frequently after cyclopropane than following the other agents. In this connection it should be noted that myocardial degeneration had been recorded preoperatively in more than twice as many of the extra-abdominal cases in which cyclopropane was given as of those in which the other two agents were administered.

DEATHS

The deaths occurring in the 2,600 cases statistically studied are shown in the table. The time of death as well as the cause is recorded.

Tissues taken at autopsy from fifteen of the forty patients dying in the hospital who had received cyclopropane have been carefully studied by Dr. C. H. Bunting for evidence of tissue damage that might have been brought about by this agent. Briefly his comment is as follows:

The attention of the laboratory was directed toward possible harmful effects of cyclopropane as an anesthetic by the occurrence in a patient after prolonged anesthesia of lesions comparable to those seen in dogs after excessive anesthesia with the same drug. These consisted of hyaline degeneration and necrosis of heart muscle fibers and hyaline necrosis of cells of the convoluted tubules of the kidney.

As a result, the organs in fifteen fatal cases have been scanned rather carefully for indications of injury, especially to the heart, kidney and liver. It has been difficult to evaluate the lesions found, as the patients had been on the whole

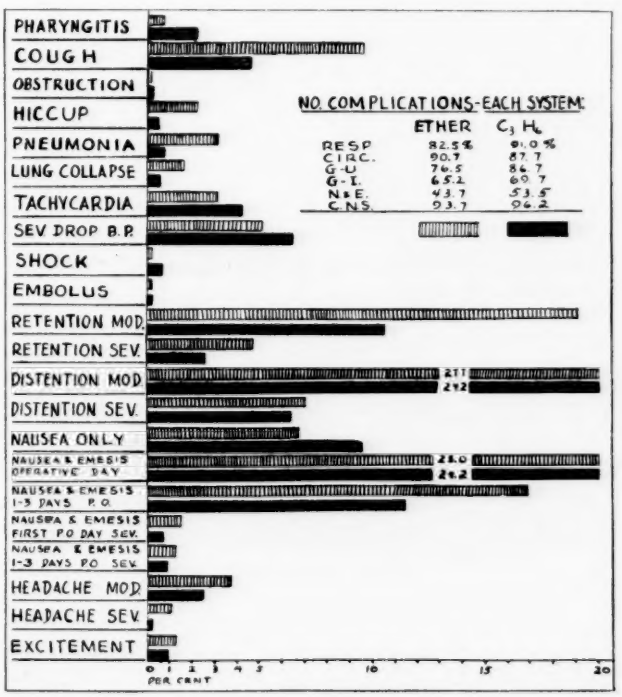


Fig. 4.—Postoperative morbidity following 400 cases each of anesthesia with ether and cyclopropane for abdominal surgery. The table shows, by systems, the percentage showing no complications. The graph represents the percentage incidence of each complication.

extremely handicapped not only by chronic lesions but by acute terminal infections. Therefore, any notation as to lesions must be accepted as subject to correction on more extended study.

The general observations are as follows:

Heart.—A definite tendency toward hyaline degeneration and necrosis of heart muscle fibers has been noted. This may involve complete fibers or may be limited to a marked hyaline swelling of the intercalated disks and evidence of injury to the adjacent part of the fiber. In two cases with a survival of two weeks or more after operation there was found a fairly widely disseminated hyaline degeneration of the peripheral sarcostyles

of the muscle fibers. The unusual character of the lesion suggested the possibility that it was due to cyclopropane, yet the late occurrence of it might discredit that suggestion.

Liver.—No necrosis of liver cells that could be attributed to the anesthetic was found in any case. The lesions found were fatty degeneration and hydropic degeneration, suggesting the reduction in oxidation processes common to all the usual anesthetics.

Kidney.—The lesions of the kidney were in general of a degenerative nature, nonspecific in character, including parenchymatous, fatty and hydropic changes. Colloid degeneration of the ascending limbs of Henle was present in two cases. In several cases, more serious damage was indicated by the presence of hyaline necrotic cells found in the tubular lumen.

Several dogs have been anesthetized for periods as long as nine and sixteen hours and others for shorter periods frequently repeated. Such dogs have later been killed and their tissues are being studied. These are the animals referred to by Dr. Bunting. The patient to whom he refers in the same paragraph had been subjected to hysterectomy the day before death. The operation was technically difficult and hemostasis most unsatisfactory. Third degree circulatory depression (shock) was present during the last seventy-five minutes of operation in spite of treatment.

COMMENT

Induction with cyclopropane has appeared to be quite as pleasant as is that with nitrous oxide, though less rapid with the technic which we have used. Sensations of "ringing in the ears," "fulness" in the head and other unpleasant experiences seem less frequent than with other agents. This we have attributed to the complete avoidance of oxygen want from the beginning of inhalation. The ability to induce deep anesthesia without respiratory stimulation, irritation or the possible necessity of producing oxygen want gives the anesthetist a feeling of safety and assurance not experienced with any other agent.

Recovery has seemed to be more frequently accompanied by nausea than following nitrous oxide and ethylene. A curious observation has been made that severe nausea or nausea and emesis have more often followed minor administrations to expected ambulatory patients than to patients hospitalized for major surgery. We would therefore consider nitrous oxide the agent of choice for minor cases of short duration when suitable. Rather than risk oxygen want with nitrous oxide, however, we prefer to supplement nitrous oxide lightly with cyclopropane, returning to nitrous oxide at the earliest possible moment. For major surgery we think that the incidence of nausea and emesis is less pronounced than with the other agents in common use. The speed with which recovery takes place does not differ from the awakening following a nitrous oxide or ethylene anesthesia, provided the patient is in first plane anesthesia when the mask is removed.

As a preliminary to ether anesthesia, cyclopropane has given satisfaction. The induction is pleasant and the tolerance to ether vapor in the presence of a high oxygen content of the inspired gas makes for a smoother and quicker ether induction.

It is agreed by all members of the anesthesia staff that the induction of endotracheal anesthesia is easier with cyclopropane than with ether or ethylene. Although there may be slight stimulation of mucus following laryngoscopy and intubation, in patients receiving no premedication, we have nevertheless done many endotracheal anesthesias for brain surgery when no preliminary opium derivative, barbiturate or atropine-like drug had been given. Endotracheal cyclopropane, with large tubes for "to-and-fro" breathing,[5] is very satisfactory for brain, dental and many abdominal cases as well as for plastic work about the head. Except for central nerve surgery, morphine and scopolamine have been used as premedication. Many of these cases are finished with nitrous oxide after intubation with cyclopropane.

In performing thoracoplasty, rib resection for empyema and other operations within or outside the chest, the extremely quiet respiration, ample oxygen supply and quick recovery of the cough reflex have appeared to the anesthetist to offer ideal conditions for this work. Ease of intubation when needed is an added advantage.

In the lower part of the abdomen, including all gynecologic procedures through an abdominal incision, satisfaction has been complete for surgeon and anesthetist. Relaxation is ample. For upper abdominal work, cholecystectomy and stomach resections, for instance, noticeable defect in the relaxation has been evident in many cases. In the strong muscular type, the rectus muscles are relaxed and breathing is quiet without "forcing" the anesthesia. However, during closure of the wound, the surgeon finds the peritoneal margins retracted under the recti, sometimes causing difficulty in closure. Having had similar experiences with ether in certain cases, we have used similar remedies.

For many years, nitrous oxide has proved satisfactory for intermittent relief from pain during parturition. For a majority of patients in labor, potency and muscular relaxation are to be avoided. Only relief from pain is desired. We still prefer nitrous oxide in the early stages of labor in all cases and throughout in most. A very small amount of cyclopropane added to nitrous oxide during second stage pains has been found useful in adding potency for the occasional woman the severity of whose pains is too great to be completely relieved by nitrous oxide. In forceps delivery, version and extraction, and cesarean section, cyclopropane has proved immediately satisfactory in the few cases in which it has been used. A study of a large series of cases to determine the incidence of postpartum hemorrhage and other complications should be made. Continuous administration of cyclopropane in very light dosage by the carbon dioxide absorption technic in three obstetric cases has resulted in partial relief from pain with retained consciousness. The possibility of obtunding the sensation of pain with cyclopropane, without the production of unconsciousness, warrants further study.

APPLICABILITY OF CYCLOPROPANE

At the end of a year's study of the possible usefulness of this agent for clinical anesthesia at the Wisconsin General Hospital, we find it replacing ethylene to the satisfaction of anesthetists, surgeons and patients. We choose it in preference to ether in well over 75 per cent of the work formerly done with that agent. In the cases in which ether is still used, there seems to be an increasing tendency to choose cyclopropane in preference to nitrous oxide as a means of inducing ether anesthesia.

Our own analysis of the comparative graphs of postoperative complications leads us to believe that we may expect slightly better results by the use of cyclopropane in patients handicapped by respiratory and circulatory abnormalities. We must, however, emphasize our firm conviction that the careful individual attention of a

skilful anesthetist, well versed in the physiologic principles on which efficient respiration and circulation depend, is much more important in preventing damage to handicapped patients than is the agent used to produce relief from pain.

Clinical Notes, Suggestions and New Instruments

ZIPPER BANDAGES

GERALD H. PRATT, M.D., PHILADELPHIA

Abdominal incisions require adequate support for a long period after operation and by elimination it has been established that this support is best supplied by the application of adhesive tape strips, long enough to include the back muscles. Inadequate support to the incision in the postoperative period probably contributes as much as any other factor to wound rupture. This tight adhesive application is difficult and often painful to remove. Especially is this true in hairy males or in lower abdominal operations in which the incision encroaches on the pubis. Thorough shaving preparation does not eliminate the trouble, as the hair grows into the adhesive tape before the time of the first dressing. When the skin is burned by the iodine or other sterilizing solution, or when there is an irritating drainage, the changing of the adhesive at dressing times becomes a serious ordeal.

As most surgical routines require the dressing to be changed about the seventh and twelfth days for the removal of the superficial and retention sutures, there must be at least three changes in the adhesive tape. When there is drainage, it is often necessary to change the dressings several times a day. To avoid this annoyance many ingenious devices have been described. The Montgomery straps seemed to solve the problem for a time, but it was found that the simple strings were not sufficient to hold the abdomen and many ruptures of the wound followed their routine use. In one institution there were three such "blow-outs" in a month, emphasizing for all time the inadequacy of this type of dressing, at least in the early postoperative days. Particularly in drainage problems with an already weakened wound, is this prone to occur.

Fig. 1.—Zipper bandage applied.

At present most surgeons resort to cutting the adhesive tape down the center and stripping it free from the underlying dressing, thus having an access to the wound. It is then closed with either new adhesive tape or laced through cut out openings. This is only partially satisfactory, as it is difficult to cut and requires the surgeon to contaminate his hands in the soiled dressing. This procedure is not without its discomfort to the patient.

In the Babcock surgical service at Temple University Hospital we have been using that ingenious device which seems to have found its way into nearly everything used today, the zipper. It has solved our problem very nicely and we suggest its adoption by others of the profession, both in abdominal and in extremity work.

From the Babcock Senior Surgical Service, Temple University.

We obtained the zippers at the five and ten cent store in various lengths. These zippers are sold with a small border of cloth tape around them for attachment. This lends itself to incorporation into the adhesive tape. Sufficient adhesive strips are cut and overlapped, and the end next to the zipper is folded over so that there is a three inch facing on the adhesive side. A simple rubber punch is used to make multiple perforations at distances from half an inch to an inch in both the cloth tape around the zipper and in the faced adhesive strips. We use a punch that places a metal eyelet on the zipper tape to prevent fraying after much use. A piece of string or tape is then laced through these openings in the zipper cloth and the adhesive tape, thus joining the adhesive tape securely to the zipper. The finished dressing is then applied, one adhesive strip on each side at a time, and the tape strings are tied at the top and bottom in a bow knot. The facing of the adhesive tape prevents the dressings from sticking to the adhesive tape and greatly facilitates their removal.

Fig. 2.—Zipper opened by nurse for dressing change. The faced adhesive tape assures an adequate opening to give free access to the wound.

The zipper may be removed after use by merely pulling out the lacing on each side. It is washable and sterilizable, does not rust, and may be used any number of times. After the first experience it is easily prepared by the nurse and kept in readiness on the dressing carriages.

The patients react very favorably to the idea. This is true particularly when previous dressings or operations have made the patient apprehensive about the removal of the dressings. The draining wound may be changed freely by the attendant physician or nurse without the mechanical difficulty of opening a dressing without contamination. We find that many more dressings requiring attention every few hours can be assigned to the nurse, thus assuring regularity. The device is applicable when irrigations such as with surgical solution of chlorinated soda are being carried out, and is of great value in such wounds as osteomyelitis, fecal fistula and biliary fistula. When drainage is excessive, the use of gutta percha or cellophane is of assistance in preventing soiling of the outside coverings.

1720 Spruce Street.

SARCOMA OF THE PROSTATE

OSWALD SWINNEY LOWSLEY, M.D., AND FRANCIS NELSON KIMBALL, M.D.
NEW YORK

Sarcoma of the prostate is such a rare finding that it is considered proper to report our case in considerable detail. A diagnosis is often difficult to make, and this case is unusual in that it occurred to a man late in life. The literature shows, however, that our case is not unique in that regard.

REPORT OF CASE

S. E. B., a man, aged 64, admitted to the Urological Department of the New York Hospital (James Buchanan Brady Foundation), May 19, 1930, complained of frequency and dribbling. The frequency began about three years before admission and greatly increased in severity until the patient voided on the average of every hour, day and night. The micturition was always painful. Dribbling began one year before. At first it

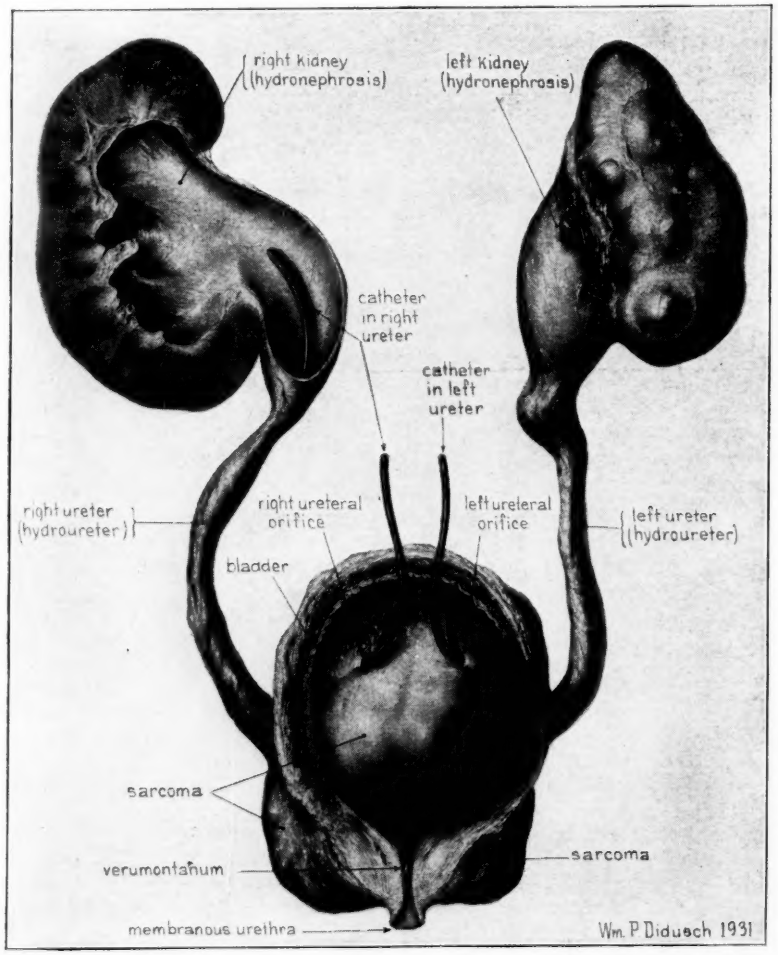
From the Department of Urology (James Buchanan Brady Foundation) of the New York Hospital.

occurred at the end of micturition. On admission it was constant. Cystoscopy had been performed about one month before and he was told that he had a moderate intrusion of the prostate. Immediately following this procedure there was marked bleeding from the urethra, but this gradually subsided.

His family and past personal histories were unimportant, except that he had a gonorrheal infection at the age of 24. Recovery was uncomplicated. He had a syphilitic infection at the age of 29 for which he received vigorous antisyphilitic treatment. The blood Wassermann reaction had been negative during the past thirty years. Physical examination showed that the hearing was slightly impaired. The heart was slightly enlarged, and the blood pressure was 170 systolic, 88 diastolic. On rectal examination the prostate was found to be about two and one-half times the normal size, flattened in type and leathery in consistency. It was our impression that the patient had an adenomatous hypertrophy of the prostate. Further physical examination prior to operation did not reveal anything unusual. A suprapubic cystotomy was performed under regional block, and the interior of the bladder showed a moderate intrusion of the prostate. Following the operation the patient made an uneventful recovery, but the kidney function failed to show any appreciable improvement. June 20 the patient was discharged from the hospital, as removal of the prostate was deferred until a more favorable period.

October 13 the patient reentered the hospital and told us that his condition had improved rapidly after he had left the hospital, except that his appetite was very poor and his sleep was greatly disturbed because of pain in the right side and flank and an elevation of temperature. However, for one week his temperature had been normal.

During his absence from the hospital he returned at frequent intervals for phenolsulphonphthalein tests and blood chemistry examinations, but the kidney function was so poor that it was impossible to do the second stage of the operation. On readmission to the hospital another cystoscopy was attempted after the suprapubic tube had been removed from the wound and the wound tightly closed by digital pressure. The instrument passed without difficulty, although it seemed to assume a peculiar angle as it entered the bladder. There was a tremendous intrusion into the bladder of the median portion of the prostate. The ureteral orifices could not be seen. The prostate appeared to be about the size of a hen's egg. October 17, intravenous urography was done. Three hours after injection the right kidney pelvis was seen to be about five times its normal size and the ureter was tremendously enlarged and distorted. The left kidney shadow and ureter were not visualized in any of the pictures. There were outlines of six distinct shadows in the right upper quadrant, which were thought to be gallstones.



Sarcoma of the prostate, showing the bladder opened in the anterior midline exposing the tremendous sarcomatous growth, which almost completely filled the bladder. The right and left ureteral orifices can be seen on the surface of the tumor mass. Ureteral catheters have been introduced to demonstrate these openings. Both ureters, although showing presence of back pressure, were patent. The right kidney is shown in section, demonstrating a marked degree of hydronephrosis. The left kidney was also hydronephrotic, and the external form showed cyst formations on its surface. The high insertion of the ureters is evident and below on each side is seen the lower portion of the sarcomatous growth. The bladder wall showed marked hypertrophy of its musculature. There was no evidence of a trigon present.

The patient gradually grew worse; marked emphysema, bronchitis, and marked embarrassment to the circulation with enlargement of the liver developed, and death occurred December 4. The probable cause of death was uremia.

An autopsy was obtained and the pertinent urologic observations were as follows:

Kidneys. — Gross Examination: There were some significant changes. The perirenal fat tissue was considerable in amount and could be readily peeled from the kidneys, their capsules being removed with the surrounding fat. The right kidney felt small and soft. The pelvis was dilated to almost the size of the kidney itself and contained cloudy mucinous material. When the pelvis was empty this kidney weighed 175 Gm. The medullary portions seemed to be relatively more thinned out by the greatly dilated renal pelvis than the cortex. The kidney substance was 2.5 cm. thick around the pelvis. The left kidney seemed even more injured by the hydronephrosis than did the right. After the pelvic fluid had been drained the kidney weighed 135 Gm. The kidney cortex was 1 cm. in thickness.

Microscopic Examination: The left kidney showed extensive interstitial fibrosis. There was a moderate amount of lymphocytic infiltration, especially in localized areas. The tubules were quite sclerotic. The right showed a similar picture with rather less fibrosis but much more marked cellular infiltration. Fairly numerous polymorphonuclears were found in addition to the very large numbers of round cells.

Ureters. — These were both greatly dilated throughout. They were fairly uniformly 1.5 cm. in diameter throughout and contained thick white mucinous urine. There was a slightly smaller diameter where the right ureter crossed the pelvic brim. The dilated ureters extended to the bladder wall.

Bladder. — Gross Examination: The bladder communicated with the suprapubic sinus. The sinus appeared well preserved and showed no irritation. The bladder contained almost no urine. It was closed down so as practically to surround the prostate without any remaining lumen. The prostate was enormous, being 8 cm. in length, 5.5 cm. in width, and 4.7 cm. in thickness (i. e., about the size of a tennis ball). The ureters could not be recognized from inside the bladder, but when probed into from the outside they were found to empty into the bladder on the most prominent portion of the anterior surface of the prostate. Their openings were very oblique and a probe within them could be seen through the bladder mucosa almost 1 cm. above the point of opening. There were a few small diverticula superior to the

prostate. On section, the prostate seemed to consist almost entirely of fibromuscular tissue. The enlargement seemed to be most prominent in the so-called middle lobe, but the lateral lobes were almost as much enlarged. Posteriorly the seminal vesicles and ampulla of the vasa deferentia were displaced somewhat laterally by nodular projections from the prostate. The ureters were displaced upward. The bulk of the growth grew into the bladder, suggesting that the process originated in the middle lobe.

Microscopic Examination: Several sections were studied. In all of them the picture was that of sarcoma, apparently of smooth muscle origin, as shown by van Gieson's stain (leiomyosarcoma). No glandular element was recognized in any section. The spindle-shaped cells varied greatly in size, and very large nuclei were found in many of the cells. There was very little cellular infiltration. Although we are listing this case as sarcoma, we do so largely on histologic grounds.

Genitalia.—The seminal vesicles were both firm and large. The testes were soft and yellowish. Microscopically, the testes showed some atrophy. There was no evidence of invasion in the seminal vesicles or in the testes.

SUMMARY

Uremia followed a ureteral obstruction by an enormously enlarged and histologically sarcomatous prostate.

The clinical diagnosis was adenomatous hypertrophy of the prostate, right hydronephrosis and uremia.

The anatomic diagnosis was leiomyosarcoma of the prostate, bilateral hydro-ureter, bilateral pyonephrosis, cholelithiasis, emphysema and bronchopneumonia.

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Special Article

THE PRESENT STATUS OF RADIATION IN THE TREATMENT OF CANCER

CLINICAL LECTURE AT CLEVELAND SESSION

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WASHINGTON, D. C.

Substantial improvement has occurred in the past few years in the treatment of cancer. This has been due to several causes, among which are improvements in apparatus for roentgen therapy, advances in technic in the application of both the roentgen ray and radium, and a change in attitude which permits radiation treatment of patients favorable for cure. There are reasons to believe that further improvement will take place in all these respects, but the results already attained justify a reappraisal at the present time of the place of radiation therapy in cancer.

Since the cause of cancer remains undiscovered, its treatment is still empirical. This is true of radiation as of other methods. The rational basis for radiation therapy goes back to the early discovered fact that embryonal types of cells are more radiosensitive than adult forms. The sensitivity peculiar to each kind of cell appears to be related to the life cycle of the cell; that is, the shorter the life cycle the more sensitive to radiation and vice versa. Lymphocytes have the shortest life cycle and are therefore most sensitive to radiation; bone and nerve cells have the longest life cycle and are therefore most resistant. Experience has fully established this principle, but it is now well known that other equally important factors enter into the problem of the curability of cancer by irradiation. Because of this it has been appropriately suggested that "radiocurability" is a better term than "radiosensitivity" for use when an attempt is made to estimate the probability of cure by radiation. Among other factors that are equally important with radiosensitivity of the cancer cells are the general condition of the patient and his reaction to radiation, the immediate tissue environment of the cancer (the cancer bed) and the relation of the growth to vital organs or important tissues that may suffer injury.

It is thoroughly established that the beneficial effects of radiation on malignant growths are due not only to the direct changes produced in the growth itself but equally to the reaction of the surrounding healthy tissues.

The explanation of the fact that some cancers show initial marked regression under irradiation but finally reach a point at which there is no further effect is probably due to several factors. One of these is the fact that the more radiosensitive cells are destroyed by the early treatment, while those that are radioresistant to the particular dose administered persist. Repetition of an equal dose will not destroy such cells any more than did the initial dose. If radiation is to accomplish additional good in such cases it must be given in a larger dose, and this is often inadmissible because of the injury that may result to the normal tissues. Great harm, with little probability of additional benefit, may be done by repeated irradiation without change of dosage. Another factor that may terminate the beneficial effects of radiation is the permanent change that occurs in the surrounding healthy tissues. They will sooner or later reach the point at which the capacity to react to irradiation is exhausted. The ideal now aimed at is to apply the total radiation dose in such a manner as to secure the optimum relation between destruction of neoplastic cells and the normal tissue reaction, the latter not being carried to such a point that prompt recovery is impossible.

Methods have been devised in the past few years which constitute an important advance in respect to proper and efficient dosage. Except in superficial cancers in which it is possible to destroy the growth by the caustic effect of radiation, the single massive dose method has been practically abandoned. Some type of fractional dosage is now in general use. The "saturation" method of Pfahler consists in administering a large initial dose and maintaining the radiation effect at a maximum by giving a small daily dose until the total dosage is attained. Theoretically the advantage of this method is that the maximum effect on the tumor cells is obtained at a time when the normal tissues are still able to react strongly. The Coutard fractional dose method of applying the roentgen ray consists in giving a very large total dose over a prolonged period (from eighteen to thirty-five days), an equal amount being given daily until the total dose has been reached. Essential factors in the method are relatively high voltage (at least 200 kilovolts) and heavy filtration (from 1 to 2 mm. of copper or its equivalent). Results have been obtained by this method, to which I will refer later, which are superior to any previously thought possible. Holfelder has used a method that aims to take advantage of the large initial dose of the "saturation" method and subsequently to build up the dosage by

From the Radiological Clinic of Drs. Groover, Christie and Merritt.
Read before the General Scientific Meeting at the Eighty-Fifth Annual Session of the American Medical Association, Cleveland, June 11, 1934.

the method of Coutard. The increased benefits from the fractionated dose method appear to arise from the improvement in the ratio between the destructive effect on the neoplasm and the reaction in the surrounding normal tissues.

Progress has taken place also in methods of radium therapy, especially in respect to interstitial radiation. The use of gold and platinum seeds was a great advance over glass seeds for the interstitial application of radon; the increased filtration lessens the danger of localized necrosis, so likely to occur when glass seeds are used. There has also been improvement in the use of radium element in needles by increasing the filtration to at least a millimeter of platinum and by using smaller needles to minimize trauma. One of the difficulties in the use of seeds and needles is that of securing a uniform distribution in the area to be irradiated. This was partly solved by the use of seeds or needles with a very small content, but better still by tubules or needles from 3 to 6 cm. in length with a very small amount of radon or radium element to the running centimeter. The use of such needles makes it possible to transfix the tissues in the form of a grid and thus to secure fairly uniform dosage.

Improvements that have been made in roentgen apparatus in the years immediately past are of importance equal to those made in technic. Machines are now in common use delivering from 20 to 30 milliamperes of current at 200 kilovolts (recently the voltage has been increased to 350 kilovolts), and tubes are available to withstand such currents. In a few places in the country special apparatus has been installed to operate at 750 and even 1,000 kilovolts. There is not yet sufficient evidence to show that such voltages produce results that are an improvement over those obtained at from 200 to 350 kilovolts. There are indications, however, that the clinical results will be found somewhat better than those being secured at present. It seems quite certain that the results in cancer are due to the amount of radiant energy that can be delivered to the cancer without permanently injuring the normal structures and that the voltage per se is of no importance. There are indications now that further advance may be made in roentgen apparatus by securing a much greater energy output by the use of tremendously higher milliamperage rather than by an increase in voltage. Such machines would not require the large space of those of very high voltage and would make possible the same biologic results by enabling the operator to treat at a much greater distance from the patient, thus securing the proper relationship between surface and depth dosage.

I have mentioned these advances to show that the possibilities of radiation in the treatment of cancer are not yet exhausted.

In an attempt to appraise the present position of radiation in malignant disease, the fact must be kept in mind that results up to the present moment have been obtained over a period of time during which the technic of treatment has been constantly changing. This has been due to new discoveries and inventions of apparatus and to a constantly widening experience. During most of this time the general attitude has been, and rightly so, that radiation was in an experimental stage. Except in the field of skin cancer, up to very recent times it was considered unjustifiable to treat by radiation any but the most advanced and hopeless cases and to use it as an adjunct to whatever surgical methods were thought advisable.

Because of results obtained in large numbers of primarily inoperable and seemingly hopeless conditions and in recurrences after operation, and because of improvement in results when used in addition to surgery, the attitude toward radiation has radically changed during the past three or four years.

Some conditions that were formerly entirely in the surgical field have now been given over to radiation therapy, notably cancer of the uterine cervix and many types of skin cancer; in others, wide dissection and removal of regional glands has been replaced by radiation treatment of the primary growth, roentgen and interstitial irradiation of regional nodes, and perhaps surgical removal of glands that persist after such treatment; that is, radiation has become the primary method instead of being used as an adjunct to surgery. In other regions of the body the question of operability is now being scanned with much greater care than formerly, since it has become known that in many cases formerly considered operable, but in which the percentage of cure is very low, much better results may be obtained by radiation alone or by radiation followed by limited surgery.

Under such circumstances of rapidly improving apparatus and technic and with an almost revolutionary change in the type of cases coming under treatment, statistical evaluation of past results has no absolute value. It serves only to indicate trends and possibilities and to point out probable lines of progress. Great care always must be exercised in interpreting the statistics that are offered in cancer under any method of treatment. General statistics of five year cures of cancer of any particular region of the body are peculiarly valueless unless they contain specific information with regard to numerous factors. For instance, five year cures in cancer of the breast mean very little unless one knows the percentage of cures in each of several age periods and has detailed information with regard to the histologic type and clinical aspects of the disease and the presence or absence of glandular involvement.

PLACE OF RADIATION IN VARIOUS TYPES OF CANCER

With the foregoing preliminary considerations in mind I shall proceed to an appraisal of the place of radiation in various types of cancer. It is obviously impossible to discuss the subject exhaustively in a paper such as this, but I shall try to illustrate all the principles involved by considering somewhat in detail several different regions.

Because they are accessible and usually can be irradiated without great danger to normal structures, cancers of the skin have been treated by radiation methods almost from the time of the discovery of the roentgen ray.

The great majority of skin cancers are either basal cell or squamous cell epitheliomas. The basal cell type when it is still small and does not involve cartilage or any other important structures is readily curable by any one of several different methods. It is a local disease without tendency to involve the regional lymphatics or to metastasize to distant parts and can be cured by complete local destruction by the roentgen-ray, radium, electrothermic methods or excision. Which method is

used is not so important as thoroughness in destroying the local lesion. When basal cell cancers become very large or involve bone or cartilage they are a more difficult problem, and radiation occupies the most important place in their treatment. A considerable percentage of such lesions can be cured by modern methods of radiation, sometimes assisted by electrothermic destruction of fungating masses. The fractionated method of Coutard constitutes an epochal advance in dealing with lesions involving cartilage. Formerly, destructive doses of roentgen rays or radium about the cartilages of the ear, eyelids, nose or larynx frequently produced a painful perichondritis or necrosis, a condition more difficult to cure than the original cancer. By applying highly filtered roentgen rays daily over a long period, the lesion may be completely destroyed and the normal tissues saved from irreparable damage.

Squamous cell epithelioma is much more important in its menace to life than the basal cell type. It early invades the lymphatics and involves the regional lymph nodes and may metastasize to distant parts of the body. Because of their invasive tendency, it is important to treat and destroy them while they are still localized. When they come under observation, however, there is no means of determining to what distance along the lymphatic drainage system cancer cells have already found their way. Excision of the local lesion is therefore a dangerous procedure, since it must be done blindly; it is only by chance that the limit of excision will extend beyond the invaded area. Whatever method is chosen to destroy the local lesion, the primary treatment should be thorough roentgen irradiation of the entire lymphatic drainage area by the fractional method.

There is a difference of opinion about the advisability of biopsy to settle the diagnosis. Nothing has been more thoroughly established than the fact that trauma, by cutting through or otherwise injuring cancer-bearing tissue, greatly increases the danger of dissemination of the cancer cells, both locally and to distant parts. There are important advantages in definitely establishing a diagnosis of malignancy and in knowing the type of histologic structure present, but the added danger of dissemination must be weighed when biopsy is contemplated. Some believe that the importance of the knowledge to be gained outweighs the danger, while others feel that biopsy should be postponed until about two weeks after roentgen irradiation in order to lessen the liability of spread.

Not only is it of prime importance to irradiate the regional lymphatic drainage area as the first step in treatment, but the method of dealing with the primary lesion is also of great importance. I believe that the method of choice in treating the local lesion is a destructive dose of roentgen rays or surface application of radium, administered at one sitting about the time when the series of treatments is begun over the regional lymphatics. Six weeks after such treatment, enlarged lymph nodes may have disappeared and the original lesion may be healed. If there is any residuum of the primary lesion it can then be destroyed by electrocoagulation or by implanting interstitially gold or platinum radon seeds or small needles of radium element. Any lymph nodes that remain palpable may be laid bare by careful incision and radon seeds or radium needles implanted.

The method described is applicable to epidermoid cancer, of the squamous or transitional cell type, anywhere on the skin. In cancer of the lip it is a much more rational method than excision followed by irradiation. If excision is to be done at all, it should always be preceded by irradiation. If cancer recurs after simple excision, it is a traumatized cancer with much greater potentialities for harm than the original lesion and with much less chance of cure by radiation therapy.

The reason that roentgen irradiation in a destructive dose or surface application of radium is preferred for the primary lesion rather than interstitial irradiation is that implantation, even of small seeds, produces considerable trauma and increases the drainage from the cancer area. Previous roentgen irradiation can do no harm and may introduce a vital element of safety.

One important consideration in radiotherapy not only of skin cancer but of cancer in any other part of the body is that practically all that is to be done should be accomplished in the first series of treatments. The possibilities of reaction in the surrounding tissues may never again be so favorable after those tissues have suffered the changes produced by irradiation. For this reason it is necessary to plan the initial treatment with the greatest attention to detail and to administer it with meticulous care. It must be realized more fully that radiation therapy of cancer to be efficient is a radical procedure and must not be entered into lightly and casually. It is just as radical a method as surgery and may require even more skill, judgment and experience for its proper use. It is important that both the medical profession and the public understand this.

I have already referred to the long known fact that the degree of sensitivity of cancer to radiation depends on its histologic structure. The cellular, undifferentiated tumors are the most radiosensitive and at the same time the most malignant. The squamous cell epitheliomas, which have just been considered, are moderately radioresistant, but there is a wide range of susceptibility to radiation even within that class of tumors. The more nearly the morphologic changes approach those of normal epithelial tissue, the less malignant they are and the more radioresistant. In more rapidly growing tumors there is less tendency to formation of pearls and connective tissue stroma and more tendency to formation of masses of undifferentiated cells. A single small squamous cell tumor may exhibit several grades of malignancy; parts of it may be highly differentiated and hence radioresistant, while other parts may be composed of masses of cells with no tendency to differentiation and with marked hyperchromatism and variation in cell size, and hence radiosensitive. These facts are of importance not only in the prognosis but also in the treatment.

There are several regions besides the skin in which epidermoid cancer is a frequently occurring lesion. I have already mentioned cancer of the lower lip. Still more important, because of their immediate danger to life, are squamous cell cancers of the oral cavity, including the tongue. Their danger arises not only from the fact that the primary lesions are somewhat more difficult to eradicate than those on the lip but also from their mode of metastasis. Metastasis from the lip affects first the lymph nodes of the submaxillary region and subsequently the superficial and deep superior cervical nodes. The lip has no direct connection with the lower cervical and supraclavicular nodes, although they may become involved in late cases. The tongue, how-

ever, has direct lymphatic drainage into all the glands of the neck, even down to the supraclavicular and tracheal nodes. Metastases to the latter are early and frequent. Statistics from various clinics indicate that about two thirds of the cancer cases of the cheek, gum of the mandible, floor of the mouth and the tongue have metastases when they first come under observation. It is apparent, therefore, that the matter of primary importance in treatment is the lymph node involvement rather than the original lesion. The first indication in all cases of cancer of the oral cavity, including those of the tongue, is to give thorough roentgen irradiation by the fractionated method over both sides of the neck from the submaxillary to the supraclavicular region. This will occupy a period of at least three weeks, during which time efforts should be made to clean up infections in the mouth and to treat any intercurrent disease, such as syphilis, which interferes greatly with the healing of cancer. At the end of about a month from the beginning of the roentgen treatment the local lesion may be dealt with by implantation of highly filtered radon or radium element, or by electrothermic destruction. After about three months, when the roentgen reaction has entirely subsided, any palpable nodes in the neck may be destroyed by implantation of radon or radium through an incision. Statistics are becoming available from numerous clinics which indicate a great improvement in the results of treatment of intra-oral cancer. Whereas the best results of surgery in good hands is from 10 to 20 per cent of cures in operable cases, reports of radium and roentgen treatment indicate that from 20 to 35 per cent of cure in all cases may be expected, including those that are inoperable. It seems reasonable to believe that results will be somewhat further improved by the general use of thorough roentgen treatment by the fractional method preliminary to treatment of the primary lesion.

Another region in which epidermoid cancer is common is the tonsil, where surgical treatment is hopeless. There is no doubt that primary regression of these malignant growths and at the same time complete disappearance of cervical nodes may be brought about by prolonged fractionated roentgen irradiation. What percentage of permanent cures can be expected is as yet unknown, but squamous cell carcinoma of the tonsil, even with glandular involvement, is no longer a hopeless disease. The lymphosarcomas and the so-called lympho-epitheliomas of the tonsil are among the most radiosensitive of all tumors, and their complete regression along with any glandular extensions may be secured by relatively small doses of roentgen radiation. They metastasize very early, however, and unless they can be treated before this takes place there is little chance for ultimate cure. A somewhat more hopeful class of tumors for radiation therapy, which occur in the tonsil and the parotid, are the mixed cell tumors of embryonic origin. External irradiation is the method of choice in their treatment.

The great majority of cancers of the larynx, especially those which arise entirely within the larynx, are squamous cell epitheliomas. A real advance has been made in the treatment of these cases by the use of the Coutard method. The use of radium within the larynx has always been hampered by the danger of injury to the cartilages whenever the dosage was sufficient to destroy the cancer. Many reports have been published recently of good results obtained by external irradiation by the prolonged fractional method. Even in far advanced, inoperable cancer of the larynx much good can be accomplished. In early cases the indications now are that the percentage of cures by irradiation will compare so favorably with those for radical operation that the disability due to the latter may be avoided in the future.

A very inadequate picture of the present use of radiation therapy in epidermoid cancer would be presented were consideration of cancer of the uterine cervix to be omitted. A small percentage of cancers in that location are adenocarcinomas, but the great majority are squamous cell epitheliomas. Irradiation is now the generally accepted treatment for all cases of cancer of the cervix. A great variety of methods of applying radiation therapy in this region have been used. The following general procedure, recommended by William P. Healy, which is now widely used, has gradually evolved from extensive experience. It is not suggested that it is the only effective method, but it has been found highly successful in practice and is in accord with present knowledge of the action of radiation in cancer:

1. Roentgen irradiation of the entire pelvis with high voltage and heavy filtration, spread over suitable time. This recognizes the importance of dealing first with metastases into the regional lymphatic areas and of preventing dissemination of the disease from subsequent manipulation of the local lesion.

2. Approximately ten days after completion of the roentgen series, the radium treatment in the vagina and cervix is begun. Applicators containing radon or radium well filtered (0.5 mm. of platinum or equivalent and rubber) are placed against the cervix and in the lateral fornices for a total dosage of from 3,000 to 4,000 millicurie or milligram hours. This deals with the superficial cervical lesion and extensions into the base of each broad ligament.

3. A day or two after the vaginal application, tubes in tandem are inserted into the cervical and uterine canal for a total dosage of about 3,000 millicurie or milligram hours.

4. About a month or six weeks after the beginning of the treatment the patient is carefully examined for any small remaining lesions, and these are treated by the interstitial application of radon seeds or small radium needles.

Emphasis must be laid on the necessity for the utmost care in carrying through the radiation treatment in all its details; external roentgen irradiation must be thorough; the vaginal applicators must be so applied that the cervix and bases of the broad ligaments receive adequate dosage but with care to avoid damage to the bladder and the rectum; intra-uterine applicators must be so inserted that extension of the disease into the fundus will receive adequate dosage and, finally, any remaining uncured lesions must receive interstitial irradiation.

After this primary course of irradiation, further radiation treatment is almost absolutely contraindicated. If the disease recurs, further irradiation is likely to cause irreparable damage to the bladder or rectum. Everything that is to be accomplished should be done at the first series of treatments.

The results of radiation therapy in cervical carcinoma constitute a great advance over previous methods of treatment, and these results are constantly improving as experience accumulates. There is quite general agreement that external roentgen therapy is of distinct value and that its use is resulting in an increased percentage of cures.

Up to this point I have considered only the epidermoid type of carcinoma. Most of the principles involved in radiation therapy of cancer are illustrated by the methods employed in the epitheliomas, which I have discussed, but some of the special problems of radiation therapy can be set forth more clearly by a brief consideration of a few other types of cancer.

Cancer of the breast until very recently was subjected to radiotherapy only when hopelessly inoperable or as a postoperative measure. The fact that about 70 per cent of the total number of breast cancers are not curable by surgical means presents a constant challenge for the persistent trial and development of radiotherapy, the only other means that at present offers any hope for the cure of cancer.

The following points with regard to the treatment of carcinoma of the breast are now quite generally accepted among experienced radiotherapists:

1. The initial treatment in all cases of breast carcinoma should be a thorough course of high voltage roentgen irradiation over the breast and lymphatic drainage areas, a total dosage of about 5,000 roentgens spread over at least three areas over a period of twenty-one days.

2. If the tumor is inoperable because of fixation, extensive glandular involvement, the age of the patient or the type of the cancer (inflammatory type, cancer en cuirasse or acute duct carcinoma), the subsequent treatment will depend on the condition present from six to eight weeks after the roentgen treatment. In very extensive involvement the palliation resulting from the initial treatment may be all that it is possible to accomplish. In others it is often possible to destroy localized nodules or ulcer by interstitial application of radon or radium. Much can be accomplished in seemingly hopeless conditions for the comfort of the patient and prolongation of life.

3. If the tumor is operable, the logical time for operation is from six to eight weeks after the roentgen irradiation. Nothing but good is accomplished by this delay; the devitalization of cancer cells and sealing of the vascular channels greatly lessens the liability of dissemination of the disease at the time of operation. Preoperative irradiation in breast cancer as a routine measure is undoubtedly a real advance in treatment of this disease. When the roentgen treatment is administered by the Coutard method, the injury to normal structures is not such as to create any difficulties or untoward complications in the operation.

4. The question of postoperative irradiation is in a somewhat unsettled condition at present. There is good evidence that it has substantially increased the percentage of cures over what is possible with the radical breast operation alone. Now that the more rational method of preoperative irradiation is coming into use, the question must arise as to the necessity for additional irradiation after operation. If the preoperative irradiation has been given to the point of maximum tolerance, as it should be in all cases, care must be exercised in administering subsequent radiation therapy. The important point is that the total amount of radiation, preoperative and postoperative combined, must remain well within the tolerance of the normal structures.

There remain to consider the types of cancer in which very few cures have been reported, those in which only palliation may be expected and those in which radiation has no beneficial effect whatever.

In the first class are cancers of the urinary bladder, in which Burnam has reported 20.5 per cent of cures by a combination of external and implantation radiation. Good results have been reported by Barringer by suprapubic implantation of radium, and a considerable number of cures are also reported by roentgen irradiation alone by the newer fractional dosage. There seems no doubt that further improvement in results may be expected from combined radiologic methods in these distressing and difficult cases of cancer of the bladder. Lately Waters has reported hopeful results in preoperative roentgen treatment of hypernephroma and carcinoma of the kidney.

In the great field of malignant bone tumors, irradiation has made little headway except as a palliative and to control pain in metastatic carcinoma. Osteogenic sarcoma appears to be completely radioresistant. The only radiosensitive primary bone tumor in the malignant group is Ewing's endothelioma; complete cure, however, is difficult because of its tendency to distant metastasis.

Other fields in which irradiation has made little headway are bronchiogenic carcinoma, carcinomas of the gastro-intestinal tract, including the esophagus, stomach and rectum, and malignant disease of the liver or pancreas.

In spite of the large unconquered field, there is ground for much satisfaction in the improvement that has taken place in the treatment of cancer by irradiation in the years immediately past. The percentage of cures in a number of the most dangerous of the epidermoid cancers has been markedly increased, and some that were formerly entirely hopeless now show a substantial number of cures.

PROGRESS IN KNOWLEDGE OF CANCER

The principal additions to knowledge in recent years which have improved results in the fight against cancer may be summarized as follows:

1. The fractional method of roentgen irradiation with high voltage, heavy filtration and protracted time of administration has been perfected and constitutes an important advance.

2. A better understanding has developed concerning the rôle of the normal tissue environment of a malignant growth and the necessity of securing a proper relation between destruction of the cancer cells and reaction in the cancer bed.

3. There is a gradually increasing knowledge of the value of preoperative irradiation.

4. A better appreciation is evident concerning the danger of traumatizing a cancer and also of the fact that such danger can be lessened by preliminary irradiation.

5. There is a better grasp of the rôle of the regional lymph nodes and of the necessity to preserve them as intact as possible as a barrier to the spread of cancer cells, and at the same time to destroy cancer cells already lodged there.

Hope for further advance in the immediate future lies in increased application of the knowledge already at hand. Early diagnosis and treatment are just as important for radiation therapy as in surgery, although many patients with far advanced cancers which are hopeless for surgery may be cured or materially benefited by radiation treatment. It is particularly important that cancer patients be given the benefit of the latest methods of radiation therapy, especially in those conditions in which surgery has been used for many years and has shown only a small percentage of permanent cures.

There is also hope that improvements in roentgen apparatus which permit a better relation between destruction of malignant cells and effects on normal tissues will bring an additional number of cancer cases into the curable range.

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Therapeutics

THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.
CHICAGO

NOTE.—*In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The series of articles will be continued from time to time in these columns.*—ED.

THERAPY OF DISTURBANCES DUE TO HEAT

Excessive exposure to heat is liable to result in one of three rather specific conditions: heat cramps, heat prostration or heat stroke. In addition to these, it must be appreciated that, when a person is exposed to excessively high external temperature, a strain is put on the entire system, most especially the circulatory mechanism and the emunctories, so that persons handicapped by almost any systemic disease are prone to suffer from an aggravation of their symptoms entirely because of this functional strain. All such persons are in greater need of protection against such exposures than are normal persons and they can be relieved of distresses due to heat exposure, even though the distresses are not of a specific type, by measures directed against the excessive heat and its results rather than by digitalis, diuretics or hypnotics that might otherwise seem indicated. Even relatively normal persons differ greatly in their ability to tolerate heat. Least able to do this are the very young, the very old and the obese. Alcohol addicts and persons who have once had sunstroke are particularly predisposed and require especial protection.

PROPHYLAXIS

Preventive treatment is identical for the various disturbances due to excessive heat. It must embrace (1) increasing heat elimination, (2) lessening heat production and (3) minimizing exposure to heat, while (4) maintaining the heat regulating center in optimum functional condition.

1. When the human body must maintain its normal temperature in spite of an external heat near to or even above that of the system, its chief defense is the evaporation of sweat. Therefore the production of sweat should be favored. This requires the ingestion of an abundance of water, maybe from twelve to fifteen glasses a day. The frequent taking of small quantities is better than of large drinks at long intervals. This is especially true when the circulation is enfeebled. Carbonated drinks are preferable because they leave the stomach more rapidly, as the stomach does not absorb water. Profuse sweating robs the body of large amounts of salt. As much as 2 or 3 Gm. may be lost in an hour. Therefore sodium chloride should be taken in unusual amounts (from 15 to 20 Gm. daily) with the food or the drink: a level teaspoonful to a quart of water or a 1 Gm. tablet of sodium chloride with each tumblerful. This becomes less necessary after acclimatization has occurred, which in part consists of the ability to secrete extremely dilute sweat. The liberal use of fruit juices is particularly important when it is also necessary to maintain good kidney elimination, for the fruit acids direct some of the water to go out in this way.

When sweat production is not free enough, the skin —most especially the head and hair—should be kept wet with cold water, and frequent cool baths may be required.

Sweat cools a person only when it evaporates. The sweat that runs off "in streams" is lost as far as heat regulation is concerned. Sweat evaporation must therefore be favored by loose, light, thin, nonconstricting clothing or practically no clothing at all and by exposure to air currents produced by fans or between open shaded windows.

2. Heat production should be minimized by reducing muscular exertion as much as possible when the heat is intense. The midday siesta is a hygienic necessity in hot climates. Work should be done in the cooler part of the day. Work that must be done during very hot weather should be carried on in short periods alternating with rest.

Food should be light and highly digestible, moderate in amount and largely consisting of carbohydrate, with avoidance of fats (because of their high caloric value) and of protein because of the large amount of heat freed during its assimilation. Juicy fruits should be especially favored.

3. Exposure to the direct rays of the sun should be avoided, for the visible and the ultraviolet rays are the most dangerous, especially when they impinge directly on the head. Should such exposure be unavoidable, tropical helmets should be worn. Forced marching in heat and sunshine should be done in open formation so as to prevent heat and humidity stagnation, and it necessitates frequent halts in the shade. During a halt one should, if possible, avoid resting directly on the ground, for the air just above the sunned ground is hottest.

4. The heat regulating mechanism should be protected against intoxication by liquor and other narcotics, as well as by coffee or tea, or tobacco, for all these have an unfavorable effect on it and, in the last analysis, on the heat regulating center devolves the business of maintaining the normal body temperature.

TREATMENT

Heat Cramps (stoker's cramps).—These painful spasms, particularly of the abdominal muscles and of the extremities but which may be generalized so as to simulate epilepsy, are induced by excessive sweating due to hard labor in furnace rooms, foundries or such places. They are usually accompanied by pallor, nausea, dizziness and mental depression. The pulse is rapid but strong and the temperature is normal.

The three fundamental indications in all heat induced disturbances are removal of the patient to the coolest place available, rest in the recumbent posture, and the supplying of salt and water. The patient should be encouraged to quench his thirst with salt solution (a level teaspoonful to a quart). He should, in addition, receive by rectum as much as he can retain by slow rectal injection of 1 per cent sodium chloride solution. If the symptoms are urgent, Physiologic Solution of Sodium Chloride may be injected by hypodermoclysis and even by phleboclysis, for which 5 per cent of dextrose may possibly be added to advantage. Milk, orangeade and lemonade should be given every two hours.

As this treatment does not give complete relief from the muscle cramps for a few hours, there is no sense in withholding a hypodermic injection of morphine (10 mg.) for prompter action, if the pains are severe. If convulsions are present, Chloral Hydrate 1 Gm. and Sodium Bromide 2 Gm. should be given by mouth or in starch water by rectum; and repeated in four hours if required. If they are very severe, sufficient chloroform should be used to produce muscular relaxation at once and this may be repeated as required.

Chloral and Bromide

℞ Chloral hydrate..... 15.00 Gm.
Sodium bromide..... 30.00 Gm.
Fluidextract of glycyrrhiza..... 30.00 cc.
Water.....to make 60.00 cc.

M. Label: Teaspoonful in milk every four hours as required. (For restlessness or convulsions.)

Heat Prostration (heat exhaustion).—The symptoms of depression of the nervous system and of collapse predominate. The temperature is usually normal or even subnormal. It seldom exceeds 101 F. The onset may be sudden, and it may occur even hours after the exposure. Recovery may not be prompt, but it is usually complete, excepting of course for preexisting disease, which is often present.

To the three fundamental indications as outlined in the treatment of heat cramps should be added stimulation: (*a*) Caffeine Sodio-Benzoate, from 0.25 to 0.50 Gm., should be injected subcutaneously every four hours, alternating with (*b*) Strychnine Sulphate, 2 mg. every four hours, if there is no tendency to convulsions. (*c*) Strophanthin, 0.5 mg., should be given intravenously if the pulse is very rapid; but this should not be repeated for twenty-four hours. (*d*) Camphor in oil, 2 cc. intramuscularly, or metrazol, 1 cc., intravenously may be used if there is no excitation state. (*e*) Aromatic Spirit of Ammonia, 1 cc. in water by mouth, by intramuscular injection or by inhalation, should be given. Its prompt though fleeting effect may favor the absorption of a hypodermically deposited stimulant.

If the body temperature is subnormal, warm baths and hot drinks should be given, but with care to avoid sudden induction of a high temperature. If the temperature is above 102 F. it should be reduced to this point by "cool ablution," as described under Fever Regimen.

Preexisting disease accompanying the condition should be taken cognizance of, as it may modify the treatment. It is the dominant factor in the after-care.

Heat Stroke (sun stroke).—Pyrexia predominates. The onset may be gradual with mental excitement or depression, dryness of the mouth and skin, dizziness and headache, and frequent micturition. It may be sudden, the patient being struck down with delirium, stupor or coma and a hyperpyrexia (temperature up to 107-110 F.) with an intensely hot skin, which is usually dry but may be moist. In the semicomatose patient the superficial reflexes are abolished; in the comatose, all reflexes are absent.

To avoid erroneously treating sudden prostration from pernicious malaria for heat stroke, blood examination should be made as a routine procedure in malarial districts.

In the treatment of sunstroke, one must add to the three fundamental measures described under heat cramps, most especially while plying the patient with the administration of fluid and some salt, the reduction of the hyperpyrexia. This assumes the greater an importance the higher the temperature.

The procedure that should be employed at once, wherever the patient is found, is to lay the patient in the coolest possible shady place on a table or otherwise keeping him off the ground, the head elevated, applying cold compresses to the head and neck continually, to remove most of the clothing and to sprinkle the patient with a sprinkling can or watering hose, while maintaining a constant current of air by fanning and keeping the blood in the skin by vigorous friction. This process should be kept up until the temperature, taken by rectum every few minutes, is reduced to 102 F.; or, in the absence of a thermometer, until the skin does not warm up as readily under the friction as it did at first.

The patient should then be transported to the hospital while wrapped in a wet sheet or in wet clothing, with compresses (maintained cold by frequent changing) applied to the head, which should be elevated.

In the hospital, an ice bag should be applied to the head and neck, the head kept elevated, and, if the temperature has risen, a "cold sprinkling sheet bath," as described under Fever Regimen, should be administered. In this procedure, practicing friction continuously and maintaining a constant current of air, preferably by means of an electric fan, is of great importance. Properly given, it is probably superior to the tub bath and much less troublesome. It should be repeated whenever the high temperature recurs, most especially if sweating, once reestablished, ceases. The "sheet rub with ice" might be resorted to in cases presenting an obstinate high temperature. More drastic cooling procedures, such as packing in ice, ice water baths, ice water enemas or ice water gastric lavage, should not be employed, owing to the danger of producing collapse.

These patients should be watched continuously, owing to the danger of recurrence of hyperthermia until consciousness has returned and the temperature stays about 99 F. for a few hours.

If the cerebrospinal pressure is found increased, it should be reduced by lumbar puncture, from 30 to 40 cc. of cerebrospinal fluid or as much as necessary being slowly abstracted and this being repeated as required. Abstraction of from 400 to 500 cc. of blood by venesection or by means of leeches applied to the temples and mastoids is especially indicated in the asphyxial form with cyanosis, distention of the veins and most particularly if there are signs of pulmonary edema.

Stimulation may be indicated by severe depression of the circulation. But stimulants should not be used unless absolutely required, as there is a tendency in heat stroke for extravasations of blood to occur in the brain, meninges or heart. It is these that are responsible chiefly for complications or sequelae, and they may be aggravated by too great a circulatory activity.

Artificial respiration is demanded by respiratory failure and it should be kept up until all hope of resuscitation must be abandoned. Rhythmic traction of the tongue may be employed from time to time to provoke, if possible, spontaneous respiration.

Prolonged bed treatment is required during the convalescence, as it may take many days to recover from the effect of extravasations that may have occurred in the vital organs. Living in a cool climate and absolute prohibition of alcohol are essential in the subsequent conduct of life of the survivors from sunstroke, because of the well known difficulties experienced by them in subsequent exposures to heat.

Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY OF THE AMERICAN MEDICAL ASSOCIATION HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

H. A. CARTER, Secretary.

VESTVOLD'S ORIFICIAL MAGNO-VIBRATOR NOT ACCEPTABLE

The Vestvold's Orificial Magno-Vibrator is manufactured by R. F. Vestvold, Haverford, Pa. It looks like a cylinder three-fourths inch in diameter and 7 inches long over all, with a conical tip and an electric cord connection at the other end. When the cord is attached to a source of alternating current, a vibratory force is set up.

The firm claims that this unit "gives instant relief in asthma, stimulates nerve function, and induces sleep." It is also stated that the "Magno-Vibrator breaks up construction of rectal tissue and spastic sphincter muscles; an excellent adjunct in the relief of constipation when due to this cause." Among some of the effects of the magnetic applications, according to the firm, is that "mineral elements of the body, particularly the iron, become charged with magnetic force which is distributed by the blood stream uniformly throughout the entire system. Iron acts as a catalyzer, uniting the oxygen to the cell (oxidation). That an added magnetic charge increases oxidation has been proven by clinical results." The claim that it sets up an "alternating magnetic stress" is not explained.

One unit was tested in a clinic acceptable to the Council. The investigation revealed nothing so far as its therapeutic efficacy was concerned. Furthermore, the claims for the device, recorded in the advertising matter, were unwarranted, misleading and exaggerated. The Council omitted the Vestvold's Orificial Magno-Vibrator from the list of accepted devices.

VESTVOLD'S PHOTO-ELECTRIC DILATOR NOT ACCEPTABLE

The Vestvold's Photo-Electric Dilator, manufactured by R. F. Vestvold, Haverford, Pa., is said to be useful for applying heat and electrical energy in rectal, prostatic and vaginal disorders. The unit is approximately 8 inches long and three-fourths inch in diameter and the assembly may be attached to an ordinary light socket. The surface metal looks like polished aluminum.

In the promotional literature for this outfit the following statements are recorded:

"Here is a way to administer soothing, safe, and controlled heat (infra-red rays) in a direct way. Besides the well known virtue of heat, you have in this dilator a photo-electric effect (conversion of light into electrical energy) this combination of heat and the steady flow of electrical (non-shock) energy, you will find is an excellent treatment for many Rectal and Vaginal Disorders, its emanations are instantly absorbed by the tissues."

"With the Photo-Electric Dilator, Vaginal, and Uterine Disorders are usually treated through the rectum."

"The Photo-Electric Dilator is used with the blood pressure as an indicator and is especially recommended in the treatment of hemorrhoids, menstrual disorders, and prostatitis."

"In addition to specific relief for the conditions indicated above, treatment with this dilator brings about a general relaxing of the nervous system, and often relieves such symptoms as headaches, mental depression, nervousness, backache, and frequent urination."

"Just the thing for the busy practitioner. No waiting for the Photo-Electric Dilator to get hot, it is ready for use in a minute's time after it has been plugged in on the electric circuit."

The unit was examined in a clinic acceptable to the Council. The report reads as follows:

The instrument is called a Photo-Electric Dilator. This name is regarded as a misnomer. The circular contains a parenthetical statement implying that this instrument converts light into electric energy, or makes use of the photo-electric effect. Farther along the directions explain that this particular instrument works by plugging it into an electric circuit. It seems, therefore, that one deals with electric energy directly as converted into heat. There is no attachment through which light energy is converted into electric energy. This instrument has a red light in series which works, apparently, as a rheostat, and this light does actually convert electric energy into light, but so far as can be determined it has nothing to do with any therapeutic action.

It is difficult to understand how this instrument can give specific relief for hemorrhoids, menstrual disorders, prostatic trouble, headache, mental depression, backache, and frequency of urination. It is difficult to perceive how this instrument effects a cure of backache due, for example, to tuberculosis of the spine, or how it cures frequency of urination due to a stone in the bladder, or frequency due to or associated with tuberculosis of the bladder and kidneys.

The use of heat by rectum as an adjunct to other forms of treatment in cases of infections of the prostate gland and seminal vesicles has been recognized for many years. The heat may be supplied by hot rectal irrigations. The statement is made in the circular that the heater supplies heat to the prostate, and this is probably true. However, the claim that applying heat through the vagina or heat through the rectum can cure mental depression is questionable. In other words, instruments of this kind supply heat to the prostate through the rectum and as such they may be valuable adjuncts.

Because the aforementioned claims for the unit have not been substantiated by critical evidence, and since they are regarded as unwarranted, exaggerated or misleading, the Council voted to omit the Vestvold's Photo-Electric Dilator from the list of accepted devices.

Committee on Foods

THE COMMITTEE HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT.

RAYMOND HERTWIG, Secretary.

ACCEPTANCE WITHDRAWN

PROTEO BREAD

Distributor.—Proteo Foods, Inc., Chicago.

Manufacturer.—Holsum Bakery Co., Fort Wayne, Ind.

Description.—Bread prepared from water, gluten, soy bean and whole wheat flours, skim milk, yeast, fat, egg, casein, salt, calcium-acid phosphate and a yeast food containing calcium sulphate, ammonium chloride, sodium chloride and potassium bromate.

Analysis (submitted by distributor).—

	per cent
Moisture (entire loaf)	38.0
Ash	3.0
Fat	8.0
Protein (N × 6.25)	24.1
Reducing sugar as dextrose	2.5
Sucrose	0.0
Starch (diastase method)	16.0
Dextrins (acid hydrolysis)	2.0
Pentosans	2.2
Crude fiber	1.3
Carbohydrates, available	20.5
Carbohydrates available and nonavailable other than crude fiber (by difference)	25.8
Calcium (Ca)	0.21
Phosphorus (P)	0.39
Iron (Fe)	0.005

Calories.—2.7 per gram; 77 per ounce.

Discussion.—On the basis of the recently adopted General Decision "Special Purpose Foods for Diets Restricted in Dextrose Formers" (THE JOURNAL, Sept. 1, 1934, p. 681), the previous acceptance of Proteo Bread is being withdrawn. Under this decision it is required that special breads intended for diets restricted in dextrose formers, to be eligible for acceptance, shall contain dextrose formers in an amount not greater than 3.3 Gm. of dextrose per hundred cubic centimeters (the dextrose equivalence being computed as the carbohydrate, plus 58 per cent of the protein, plus 10 per cent of the fat content of the food). Proteo Bread furnishes approximately 10 Gm. of dextrose per hundred cubic centimeters.

The label and advertising represent Proteo Bread as a "special purpose bread" particularly adapted for use in diets of the diabetic and the obese patient for the plausible reason the bread is "rich in essential proteins . . ." and "lower in carbohydrates (starches and sugars) than ordinary bread . . . most so-called gluten and soy bean breads." The caloric content of the bread is so high that it is not suitable

for the patient with obesity as claimed and as implied by the sylphlike figure on the label and in the advertising. The fact that the high protein content of the bread yields large quantities of dextrose in metabolism is disregarded. This high ultimate yield of dextrose disqualifies the bread for its alleged usefulness as a special food for patients with diabetes. The following claims are the basis of the advertising:

(Label) "Proteo Bread for diets restricted in starches and sugars... rich in essential proteins. . .Proteo Bread is lower in carbohydrates (starches and sugars) than ordinary breads and lower than most so-called gluten and soy bean breads...baked especially for those whose diets must be carefully restricted in carbohydrates."

(Advertising) "A bread-food prepared especially for carbohydrate-restricted diets and used successfully in diets for diabetes, arthritis and obesity...patients respond gratefully to this appetizing and nutritious food...a slice or two of Proteo Bread will take the place of other more fattening foods."

There is authoritative evidence that commercially prepared special diabetic foods are limited in usefulness to the diabetic patient in that the availability of insulin makes them no longer necessary. The designation of a food as a diabetic food merely because it is low in carbohydrates is now unwarranted and misleading, and gives the erroneous impression either that the food taken in unrestricted quantities in diabetes is harmless or that it has remedial action. Protein may be tolerated almost as poorly as starch by the diabetic patient.

The advertising for Proteo Bread is badly misinformative and deceptive. The bread has no specific value or usefulness in diabetic, reducing or ketogenic diets, since volume for volume it contributes approximately as much of dextrose formers to the diet as ordinary white bread. This product therefore will no longer be listed among the Committee's accepted foods.

ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary.

(A) TEMPLE STEPHENS BRAND CRYSTAL WHITE SYRUP
(B) TEMPLE STEPHENS BRAND GOLDEN SYRUP

Distributor.—Temple Stephens Company, Moberly, Mo.

Packer.—Penick & Ford Sales Company, Inc., Cedar Rapids, Iowa.

Description.—(A) Table syrup; corn syrup sweetened with sucrose. The same as Penick Crystal White Syrup, THE JOURNAL, April 9, 1932, page 1268.

(B) Table syrup; corn syrup flavored with refiners' syrup. The same as Penick Golden Syrup, THE JOURNAL, April 2, 1932, page 1159.

Claims of Manufacturer.—Recommended for use as an easily digestible and readily assimilable carbohydrate supplement to milk in infant feeding and as a syrup for cooking, baking and the table.

SUNSWEET JUICE OF THE DRIED PRUNE (WITH WATER ADDED)

Manufacturer.—California Prune and Apricot Growers Association, San Jose, Calif.

Description.—Pasteurized water extract of dried prunes.

Manufacture.—Dried prunes are immersed in hot water to dissolve or soften outside organic matter, thoroughly washed, placed in boiling water for from three to five minutes, transferred to a steam jacketed kettle and simmered for two and one-half hours in twice their weight of water, which is drawn off. The drained prunes are boiled for fifteen minutes in a second batch of water. The prunes are removed and the liquid content is expressed in a cider press. The pulp is boiled in water, removed and again pressed. The resulting expressed fluids and water extracts are blended, standardized to 19 per cent sugar content by the addition of water or prune extract concentrate, during which time the temperature is maintained at 88 C., filled into bottles, pasteurized for twenty-five minutes at 86 C. and cooled.

Analysis (submitted by manufacturer).—

	per cent
Moisture	82.7
Ash	0.3
Fat (ether extract)	0.02
Protein (N × 6.25)	0.4
Reducing sugars as invert sugar	12.0
Sucrose	0.6
Crude fiber	0.0
Carbohydrates (by difference)	16.4
Titratable acidity as malic acid	0.2
Aluminum (Al)	0.001
Calcium (Ca)	0.01
Chlorine (Cl)	0.003
Copper (Cu)	0.0003
Iron (Fe)	0.003
Magnesium (Mg)	0.01
Manganese (Mn)	0.00005
Phosphorus (P)	0.02
Potassium (K)	0.17
Silicon (Si)	0.002
Sodium (Na)	0.01
Sulphur (S)	0.008

Calories.—0.7 per gram; 20 per ounce.

Claims of Manufacturer.—Gently laxative. No added sugar or preservative.

ILLINOIS VALLEY VITAMIN D FORTIFIED PASTEURIZED HOMOGENIZED MILK

Distributor.—Illinois Valley Ice Cream Company, Streator, Ill.

Description.—Bottled pasteurized homogenized milk fortified with vitamin D (vitamin D concentrate prepared from cod liver oil); contains 400 U. S. P. X (Revised, 1934) vitamin D units per quart.

Preparation.—The milk complies with legal requirements, is pasteurized by the standard holding method, and is homogenized at a pressure of 2,500 pounds per square inch. See THE JOURNAL, July 1, 1933, page 34, for description of fortification with vitamin D.

Vitamins.—The vitamin D concentrate used and the fortified milk are regularly tested biologically. Clinical investigation shows this milk to be a reliable antirachitic agent if the proper amount is used.

Claims of Distributor.—A vitamin D fortified antirachitic pasteurized homogenized milk having otherwise the flavor and food values of usual pasteurized milk. The cream does not separate.

HAWAIIAN FINEST QUALITY PINEAPPLE WAPCO BRAND BROKEN SLICES (VACUUM PACKED), GRATED, SLICED (VACUUM PACKED), TIDBITS (VACUUM PACKED)
WHITE SWAN BRAND SLICED (VACUUM PACKED), CRUSHED, GRATED

Distributor.—Waples Platter Grocer Company, Fort Worth, Texas.

Packer.—Hawaiian Pineapple Co., Ltd., San Francisco.

Description.—Canned pineapple packed in concentrated pineapple juice with added sucrose. The same as Dole Hawaiian canned pineapple products, THE JOURNAL, April 8, 1933, page 1106, and April 29, 1933, page 1338.

QUAKER BRAND GELATIN
VOGT BRAND GELATIN

Distributor.—Cherry-Burrell Corporation, Chicago.

Packer.—Swift and Company, Chicago.

Description.—Granular plain gelatin; unsweetened and unflavored. The same as Swift's Gelatins, THE JOURNAL, Jan. 16, 1932, page 231.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, SEPTEMBER 29, 1934

NUTRITION AND RESISTANCE TO INFECTION

During the last thirty years the science of nutrition has shown such a rapid and sound development that at present it is accepted as one of the disciplines on which depends the welfare of man and his domestic animals. The intimate relation of nutrition to such processes as growth, reproduction and activity is taken for granted. As a logical outgrowth of the extensive investigation on which this point of view rests, it is now common to hear diet referred to as one of the important factors in preventive medicine. It can readily be demonstrated that such features of physiologic economy as acid-base balance, deficiency diseases and bone development are more or less closely associated with diet; the effect of nutrition on resistance to infection is not so obvious, although the mass of alleged evidence is enormous. Clausen [1] has recently reviewed the subject, confining himself to a consideration of infections of bacterial origin.

A survey of the results of studies designed to demonstrate the influence of diet on the transmission of antibodies by way of colostrum and milk as well as on the level of antibodies in the serum shows much confusion and little evidence for the thesis. In discussing the resistance of tissues to infection, it is pointed out that more carefully planned experiments are necessary before definite conclusions can be reached. It does appear, however, that scurvy lowers the resistance of guinea-pigs to tuberculosis and that a deficiency of vitamin A may decrease it in the rat and mouse. Clinical observations have been exceedingly difficult to interpret and there is little convincing evidence that there exists a specific relation between the recognized dietary factors and resistance to tuberculosis in man. Throughout Clausen's discussion it is evident that, in human experience, the available information of the infection invariably far exceeds the knowledge of the dietary fault involved and that conclusions are made difficult, in addition, by the inability to subject patients to controlled nutritional programs.

1. Clausen, S. W.: Physiol. Rev. **14**: 309 (July) 1934.

Another extensive survey with emphasis on the relation of the vitamins to resistance to infection has been written by Robertson.[2] The available evidence was subjected to four criteria: determination of any change in natural immune bodies or cellular reactions due to the deficiency, the evaluation of antibody responses after injection of appropriate antigens into experimental animals, the liability to spontaneous infection shown by poorly fed animals, and the susceptibility of individuals maintained on inadequate rations to experimentally induced infections. Despite the fact that vitamin A is called the anti-infective vitamin, there is a paucity of really cogent experimental results or clinical observations regarding this alleged function of vitamin A. It is concluded from the summary both of immunologic studies and of spontaneous infections that rachitic animals are more susceptible than are normal ones to spontaneous as well as artificially induced infections. Judged by immunologic reactions, neither scurvy nor deficiency in vitamin B is attended by consistent variations in resistance to infection. It has not been shown that, in early vitamin B deficiency before symptoms become severe, there is a decrease in resistance to artificially induced infections.

It should be borne in mind that these reviews have approached the subject of infection as a more or less specific biologic phenomenon. Secondary infections commonly seen after tissue damage has been brought about by the dietary deficiency are not considered in evaluating the evidence. Despite the many demonstrated correlations between lack of an essential dietary factor and functional and structural change in the organism, there is surprisingly little cogent evidence of a specific relation between these factors and infection.

CYSTEINE AND THE TENDENCY TO HEMORRHAGE IN OBSTRUCTIVE JAUNDICE

Numerous examples may be found in clinical literature demonstrating that an impaired activity of one organ or tissue may produce an abnormal performance of another, often one having an entirely different physiologic function. The tendency to hemorrhage in obstructive jaundice is a typical example. The distinct susceptibility of jaundiced patients to bleeding introduces a grave complicating factor in the treatment of this malady, as surgical intervention, the only satisfactory remedial procedure, may lead to fatal hemorrhage. The observations of Walters [1] several years ago, that the death of more than half of a series of jaundiced patients subsequent to abdominal operation was the result of large intraperitoneal hemorrhage, emphasizes the importance of this complicating feature.

Several theories postulating a deficiency of one of the clotting elements have been advanced to explain the

2. Robertson, Elizabeth C.: Medicine **13**: 123 (May) 1934.

1. Walters, Waltman: Preoperative Preparation of Patients with Obstructive Jaundice, Surg., Gynec. & Obst. **33**: 651 (Dec.) 1921.

abnormal mechanism of coagulation in obstructive jaundice, and each in turn has been largely abandoned. The calcium theory has not proved tenable, repeated analyses having shown that the total and "available" serum calcium of jaundiced subjects usually fall within normal limits. Likewise, normal values have been obtained for blood platelets, for plasma fibrinogen, for fibrin, and even for the clotting time of the blood itself. Recent investigators,[2] after confirming the foregoing observations both in jaundiced patients and in experimental animals with ligated biliary ducts, have approached the problem from a different angle. The presence in the blood of a positive agent that inhibits the normal clotting mechanism was considered. Such a possibility seemed particularly pertinent in view of the fact that bile is an important excretory medium for a variety of substances which, as a result of biliary obstruction, might accumulate in the blood stream. In support of this view is the fact that in jaundiced patients the blood clot, although forming as rapidly as normal, is large, friable and nonretractile, as though syneresis of the fibrin had been inhibited. In contrast to the normal compact clot, a porous mesh of this kind might permit the seepage of cells and plasma from a damaged blood vessel and thus lead to the slow, persistent exsanguination encountered in cases of obstructive jaundice.

An observation [3] that cysteine inhibits blood coagulation induced Carr and Foote [2] to study the possible relation of this amino acid to the impaired clotting reaction in obstructive jaundice. Preliminary studies demonstrated that the addition of minute amounts of cysteine to normal blood shortened the coagulation time and changed the clot to a large, friable, nonretractile mass closely resembling that formed by the blood of jaundiced human subjects. The injection of large doses of cysteine into normal animals produced a similar effect. Color tests for cysteine demonstrated that none was present in normal plasma, whereas definite reactions were obtained on the plasma from jaundiced animals. Furthermore, the intensity of the test increased progressively with the tendency to hemorrhage.

The foregoing indications that cysteine or perhaps some related mercaptan is intimately related to the abnormal clotting reaction in jaundiced subjects prompted an investigation of the therapeutic action of brombenzene, a substance that combines with cysteine to form bromphenyl-mercapturic acid, excreted in the urine. The tendency toward bleeding was definitely reduced in the treated animals and they did not die of hemorrhage. Crystals of bromphenyl-mercapturic acid were isolated from the urine.

While this investigation is undoubtedly a valuable contribution to the current knowledge of the etiology of the hemorrhagic tendency in obstructive jaundice, much more experimental work on the subject is needed before conclusions can be drawn. Likewise, although the beneficial action of brombenzene therapy is at least suggestive, it should be recalled that this substance is definitely toxic and should be used with the greatest caution. Perhaps of most immediate clinical import is the suggestion that an excess of protein, the metabolic precursor of cysteine and related mercaptans, should be avoided in the diet of patients with obstructive jaundice.

2. Carr, J. L., and Foote, F. S.: Progressive Obstructive Jaundice: Changes in Certain Elements of the Blood and Their Relation to Coagulation, Arch. Surg. **29:** 277 (Aug.) 1934.
3. Mueller, J. H., and Sturgis, Sommers: Prevention of Blood Coagulation by Cysteine, Science **75:** 140 (Jan. 29) 1932.

EXCRETION OF UREA

There is a perennial thrill about the search for the final explanation of the mechanism of renal function. Of the recognized organs of excretion, the kidney would seem to have received its full share of attention; further study has only served to emphasize its manifold connection with the physiology of the organism. Ordinarily, renal function is considered primarily in relation to the formation of urine, the concentration and removal of metabolic waste products with the maximum conservation of water. A recent study by Van Slyke, Rhoads, Hiller and Alving [1] bears significantly on this point; the relationships between urea excretion, renal blood flow, renal oxygen consumption and diuresis are considered. The investigation differs from previous ones in that it was carried out on experimental animals in which one kidney was explanted [2] intact directly under the skin, so that simultaneous samples of urine and blood from the renal vein and femoral artery could be obtained without the use of anesthesia.

This study is concerned directly with the factors controlling the urea clearance test,[3] the introduction of which several years ago marked an important advance both in experimental investigations in renal physiology and in the clinical diagnosis of renal disease. In this test the amount of urea excreted per minute is compared with the concentration of urea in the blood; the "clearance" indicates the quantity of blood, in cubic centimeters, the urea content of which is excreted in one minute. In the normal human adult this is about 75 cc. In severe renal disease the urea clearance may be reduced to 5 per cent of the normal value, at which point uremia usually supervenes. But it has been shown that marked variations in blood urea do not significantly affect the result of this test. If the blood urea is higher, the same amount of blood is nevertheless "cleared" of urea, more of the latter being excreted.

The experiments of the Rockefeller investigators were performed on dogs, in all of which one kidney

1. Rhoads, C. P.; Alving, A. S.; Hiller, Alma, and Van Slyke, D. D.: The Functional Effect of Explanting One Kidney and Removing the Other, Am. J. Physiol. **109:** 329 (Aug.) 1934. Van Slyke, D. D.; Rhoads, C. P.; Hiller, Alma, and Alving, A. S.: Relationship Between Urea Excretion, Renal Blood Flow, Renal Oxygen Consumption, and Diuresis: The Mechanism of Urea Excretion, ibid., p. 336.
2. Rhoads, C. P.: Am. J. Physiol. **109:** 324 (Aug.) 1934.
3. Møller, Eggert; McIntosh, J. F., and Van Slyke, D. D.: Studies of Urea Excretion: II. Relationship Between Urine Volume and the Rate of Urea Excretion by Normal Adults, J. Clin. Investigation **6:** 427 (Dec.) 1928.

had been explanted; in some the other organ was removed. Following a fast of twenty-four hours, a solution of sodium chloride in constant proportion per unit of body weight was administered by stomach in order to maintain the rate of urine excretion above the "augmentation limit," that rate below which the blood urea clearance ceases to be independent of urine volume and decreases with decreasing urine output (about 2 cc. per minute in man). The observations in each experiment covered three or four successive periods, each of about an hour. The dog was catheterized at the beginning of the experiment and at the end of each period. At about the middle of each interval, blood was drawn from the renal vein; this was followed usually after from two to five minutes by withdrawal of a sample from the femoral artery.

From the values of urea concentration in the blood from the femoral artery and renal vein and the total urea excretion in the urine, not only was the renal blood flow calculated but also the proportion of urea in the blood that was extracted by the kidney. When the blood urea was at the fasting level, from 6.7 to 10.6 per cent was extracted; when the arterial blood urea concentration was increased as much as ten times, the extraction values still varied from 8.6 to 10.4 per cent. This uniform efficiency in the face of greatly augmented work performed was maintained without a significant increase in renal blood flow. It appears then that the kidney may remove a constant proportion of the urea in the blood flowing through it, regardless of the concentration of urea in that blood within the limits studied. This was found to maintain over a range of from 8 to 137 mg. of blood urea nitrogen per hundred cubic centimeters. The mechanism by which the kidney tends to keep the urea clearance at a constant level under these conditions therefore appears not to be dependent on changes in blood flow. However, changes do occur spontaneously in the clearance and these were found to parallel alterations in rate of circulation of blood through the kidney. The latter observations are of interest in view of a recent report by Goldblatt,[4] who found in a study of experimental hypertension that mechanical interference with flow through the renal arteries may cause diminution in urea clearance if the flow is sufficiently reduced, but that moderate constriction of the renal arteries, sufficient to induce persistent arterial hypertension, may not produce an appreciable change in the clearance.

Van Slyke and his co-workers found in a few instances that blood from the renal vein contained even more urea than that from the femoral artery; observations made before and after these occurrences showed normal comparative levels. Such variations these investigators believe may have been due to reflexes initiated by venipuncture, but it was not found possible to reproduce these effects at will. They suggest that this phenomenon, which apparently involves reabsorption, may be an occasional factor in other cases of diminished urea clearance.

Access to blood in the renal vein permits the ready determination of oxygen consumption by the kidney. Removal of one kidney brought about an increase in the oxygen used by the remaining organ, a change that parallels the speeding up of other activities already noted. On the contrary, neither diuresis nor excretion of increased amounts of urea was accompanied by rise in oxygen consumption. Renal blood flow and use of oxygen by the kidney tended to vary in a parallel manner, presumably in response to similar or common metabolic demands. That the cells of the kidney ordinarily require a higher oxygen tension than do most other organs is indicated by the fact that the blood in the renal vein is usually more than 85 per cent oxygenated. After removal of one kidney, observations made one week later showed that the blood flow through the remaining organ was increased about 68 per cent; oxygen consumption rose 81 per cent and urea clearance 43 per cent. Beyond this period no further significant changes were observed; the kidney apparently takes over a large share of the work previously performed by its mate but not all of it.

The studies of the Rockefeller group have demonstrated anew the efficiency of the kidney, as far as the excretion of urea is concerned, and facile adjustments, which permit the maintenance of renal function after unilateral nephrectomy. The observations made under experimental physiologic conditions so little removed from normal provide a point of departure for elucidation of the details of abnormal renal activity.

4. Goldblatt, Harry; Lynch, James; Hanzal, R. F., and Summerville, W. W.: J. Exper. Med. **59**: 347 (March) 1934. An Investigation Into the Cause of Hypertension, editorial, J. A. M. A. **102**: 1610 (May 12) 1934.

Current Comment

PHYSICAL ALLERGY

The problems of physical allergy, particularly the relationship of cold to sensitivity, are under investigation in many places. The manifestations are striking and, to the patient, a serious problem. A survey of the available literature on the subject offers some interesting comments by older observers. Thus, Salter[1] in 1882 said in commenting on asthma: "Until lately I felt no doubt that the asthma was, in these instances, a mere reflex nervous phenomenon, but of late I have seen some cases, not asthmatic, that have shown me how quickly—how immediately, indeed—cold to the surface and extremities may derange the vascular balance of the bronchial mucous membrane, and which suggest, therefore, that even in these asthmatic cases the vascular condition of the bronchial mucous membrane may be the link between the external cold and the bronchial spasm." A case of urticaria due to cold was reported

1. Salter, Hyde: Asthma: Its Pathology and Treatment, first American Edition, 1882.

by Fraser [2] in 1905, and in the same year Osler [3] noted urticaria due to exposure to cold. Moreover, Ward [4] in 1905 mentioned a patient who was sensitive to certain spectrums of the sun's rays but not sensitive to heat. At the same time he described a patient subject to angioneurotic swellings on exposure to cold and said that he had observed this phenomenon since 1880. Thus physical allergy has been definitely recognized for about three quarters of a century. If sensitivity to light is included, it is found that Bazin [5] mentioned a disease entity of the skin caused by sensitiveness to light in 1855, an observation that was subsequently confirmed by Hutchinson [6] and by White.[7] THE JOURNAL [8] called attention to the importance of sensitivity to cold as a cause of sudden death in drowning. Now that the possibility of severe bodily reactions from heat, cold, light and other physical agents has been so definitely established, the explanation for many unexplainable symptoms may become apparent.

Medical Economics

ALAMEDA COUNTY (CALIF.) PLAN

Before any plan was adopted, the Alameda County Medical Association undertook a study to determine the best method of providing medical care for three classes of the population: (1) the indigent, (2) the individual of moderate means, and (3) those who can properly finance their medical care.

Various clinics and other institutions supplying medical care were already operating in Alameda County with little cooperation and no coordinating body. In 1917 the county board of supervisors established the Alameda County Institutions Commission for the purpose of taking entire charge of all county institutions wholly supported by county funds and designed for the care of the indigent sick.

In 1930, when the problems of medical care became more acute, another survey was made. The report of this survey recommended that all indigents be referred to clinics operated by the County Institutions Commission, or to county physicians, who were regular salaried employees on a part time basis. All pay clinics were abolished.

These changes left in the hands of the Alameda County Medical Association the problem of caring for the low income group, who in the new arrangement were left without medical care. After an extensive investigation, the association adopted the following resolution in October 1932:

Resolved, That it appears to be necessary to establish a plan whereby certain patients formerly cared for at health centers, who do not technically fall under the term "indigency" and at the same time require attention at the hands of reputable physicians, and whose care should be assumed at a fair price within the ability of the patient to pay; and be it further

Resolved, That the Alameda County Medical Association agrees to establish a list of physicians who will volunteer to accept calls for such classes of patients and to render service when called in cooperation with the established official county agencies and centralized social service, as established in Alameda County and according to such additional plans as may be adopted.

The call for volunteers to cooperate in carrying out the plan met with practically 100 per cent response from the members of the association.

Arrangements were then made for a cooperative plan by the medical association and the County Institutions Commission. Members of the medical association agreed to treat nonindigent patients privately for whatever fee they were able to pay, provided their ability to pay could be determined by the County Medical Social Service, and provided any necessary social work could be rendered by medical social workers of the clinics.

"The Social Service Department of the County Institutions Commission is responsible for contributing the following types of assistance to physicians participating in the Plan:

"(*a*) Social study (economic situation, home and work environment, habits and attitudes of patients and family which may have a bearing upon the medical problem).

"(*b*) Medical Social Case Work (aiding the patient or his family to meet social problems related to his illness, and mobilizing the resources of the community to make possible the carrying out of medical treatment).

"(*c*) Determination of the patient's ability to pay for medical care. The Social Worker's chief contributions here are:

(1) Securing adequate data regarding financial status of patient and family.
(2) Evaluating this in terms of the social and medical need of the patient.
(3) Assisting patient and family to develop an attitude of willingness to pay for medical care, and aiding them to develop resources for payment within their means.
(4) Securing relevant information from other agencies who have known the patients.

Recommendations as to fees patients can pay naturally become a by-product of the above investigation.

"The Medical Worker has the following relationship to any business agency established for the purpose of credit rating:

"(*a*) She can give a professional opinion as to the patient's financial resources, and his attitude of cooperation with the physician.

"(*b*) She cannot take the place of the credit agency in investigation of the patient's past records as to credit rating, and the risks involved in extending credit to him."

When a call for service is made at any of the county institutions, the social service department ascertains whether the patient is already receiving relief and, if so, or if known to be indigent, the patient is referred to county physicians.

"If the patient's financial status is unknown or if he is known to be able to pay something for a home visit, the worker explains that a private physician will be sent and that the physician will discuss with him the matter of payment.

"The worker then refers the call by telephone to the next physician on the rotating list, giving him the data for Section A and B of Form 2538. She stamps the date on the physician's card and places the card at the end of the list. She records this call on the 'Report of Patients Referred to Private Physicians.' In case the first physician called cannot go, she continues down the list until she finds a physician who can make the call."

The physician makes at least one visit and renders the necessary service regardless of the patient's ability to pay any part of his fee. He then fills out a form giving certain social information and sends this to the social service department, which notifies the local clinic if a social investigator is requested by the physician.

Part-pay patients are referred to private physicians only after their financial status is known, and in accordance with the following procedure:

1. The social worker who has investigated the patient secures the name of the next physician on the list from the worker in that agency who keeps the list. The latter is responsible for stamping the date on the physician's card and records the referral on the "Report of Patients Referred to Private Physicians."

2. The social worker discusses with the patient the matter of payment and an understanding of the amount to be paid is arrived at before the case is referred to the private physician. The patient is also told that he will be expected to pay cash.

3. The social worker secures from the patient the signed consent for transfer of information and files this with the social face sheet.

4. She communicates with the private physician and arranges an appointment for the patient.

5. The patient is given a Refer Slip signed by the worker, on which is recorded the name and address of the physician and the date and hour of the appointment.

6. The social worker is responsible for sending to the physician any medical or social data, contained in the clinic records, which might be helpful to him in treating the patient.

7. The case is then closed at the clinic for that complaint, and considered a private patient until such time as the physician may refer it

2. Fraser, T. R.: Urticaria a Frigore, Tr. M. Chir. Soc. Edinburgh **25**: 90, 1905-1906.
3. Osler, William: Visceral Manifestations of the Erythema Group of Skin Diseases, Am. J. M. Sc. **127**: 16, 1905.
4. Ward, S. B.: Erythema and Urticaria with a Condition Resembling Angioneurotic Oedema Caused Only by Exposure to the Sun's Rays, New York M. J. **81**: 742, 1905.
5. Bazin: Hydroa vacciniforme, Cours de sémiotique cutanée, 1855.
6. Hutchinson, J.: Summer Eruption, Clinical Society's Transactions **22**, 1888.
7. White, J. C.: Hydroa Vacciniforme, J. Cutan. Dis., 1898, p. 514.
8. Cold Allergy and Drowning, editorial, J. A. M. A. **101**: 1644 (Nov. 18) 1933.

back, or until some other medical condition arises for which the patient cannot afford private care.

It is understood that the physician may request and receive assistance from the clinic social worker at any time.

Full pay patients are referred to the Secretary of the Alameda County Medical Association, for names of physicians from her own list.

During the year 1933, 2,077 referrals to private physicians were made by social workers, clerks, nurses, doctors and others in the Alameda County agencies. These referrals were made to the three groups of physicians listed in table 1: (*a*) those who were members of the Alameda County Medical Association and had agreed to take patients at reduced fees; (*b*) those who were not members of the Alameda County Medical Association and whose names, therefore, were not on the list; (*c*) referrals made to the secretary of the Alameda County Medical Association with the understanding that the patients could pay a full fee.

TABLE 1.—*Distribution of Referrals, for Medical Services Under the Alameda County Plan, Made to Physicians in the County in 1933*

	Number	Per Cent
Total Referrals	2,077	100.0
To County Medical Association	1,898	91.3
	Number	Per Cent
To Co. Med. Asso	1,898	100
For Part-pay care	1,812	95
For Full-pay care	56	5
To Physicians not on list	158	6.5
To Physicians, names not given	51	2.2

Of the total number of referrals made, 1,898, or 91.3 per cent, were made to physicians of the Alameda County Medical Association; only 158, or 6.5 per cent, were made to physicians not on the list; the remaining 2.2 per cent of the referrals were to physicians whose names were not stated but who might possibly have been members of the Association.

Of the 1,898 referred to the medical association, 95 per cent, or 1,812 referrals, were for part-pay medical care, and 5 per cent, or 56 referrals, were for full-pay medical care.

The following study has been made of the results of the first year's referrals:

Questionnaires were sent, March 1, 1934, to the 400 physicians whose names were on the part-pay lists and who were members of the Alameda County Medical Association. Information was requested on only the 1,812 cases referred for part-pay care.

Returns were received from 279 doctors, or 70 per cent of the number to whom questionnaires were sent. These returns gave information about 1,304 referrals, or 71.96 per cent of the referrals about whom information was desired.

TABLE 2.—*Patients Actually Seen*

	Number	Per Cent
Total number about whom information has been received	1,304	100
Patients seen by doctor	969	74.3
Patients not seen	335	25.7

The table shows that, of the 1,304 patients about whom some information was received, 969, or 74.3 per cent, were actually seen by various physicians, and 335, or 25.7 per cent, were not seen by the doctors to whom they had been referred.

Of the 969 patients seen, table 3 shows the percentage and the number of patients who paid no fees.

TABLE 3.—*Number of Patients Paying Fees*

	Number	Per Cent
Total number of patients seen	969	100
Patients pay fees	736	76.
Patients paying nothing in fees	233	24.

It can be seen from this table that 76 per cent of the patients actually seen paid something for their medical services, while only 24 per cent paid nothing. A complete study of the amounts received from these 736 patients has not yet been made, but the total is slightly over $5,000.

Association News

MEDICAL BROADCASTS

Columbia Broadcasting System

The American Medical Association broadcasts on a Western network of the Columbia Broadcasting System each Thursday afternoon on the Educational Forum from 4:30 to 4:45, central standard time. The next three broadcasts will be as follows:

October 4. Autumn Leaves, W. W. Bauer, M.D.
October 11. Multiple Births, W. W. Bauer, M.D.
October 18. Keep Fighting Diphtheria, W. W. Bauer, M.D.

National Broadcasting Company

The American Medical Association broadcasts on a Blue network of the National Broadcasting Company each Tuesday afternoon from 4 to 4:15, central standard time. The next three broadcasts will be as follows:

October 2. Curiosities of Medicine, Morris Fishbein, M.D.
October 9. School Health Problems, W. W. Bauer, M.D.
October 16. Research in Medicine, A. C. Ivy, M.D.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST: SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

ARKANSAS

Society News.—At a meeting of the Sixth Councilor District Medical Society in Hope, September 11, speakers were Drs. Philip M. McNeill, Oklahoma City, on complications and treatment of pneumonia; Davis W. Goldstein, Fort Smith, common skin diseases; Willis C. Campbell, Memphis, osteomyelitis; Millington Smith and Joseph W. Kelso, Oklahoma City, cancer of the cervix, and Samuel E. Thompson, Kerrville, Texas, diagnostic problems in diseases of the lungs.——The Mississippi County Medical Society was addressed at Blytheville, August 7, by Drs. Lorenzo D. Massey, Osceola, on "Use of Sodium Thiocyanate in Dysentery"; Percy H. Wood, Memphis, Tenn., "Practical Points in Gynecological Treatment," and Thomas D. Moore, Memphis, Tenn., "The Obstructing Prostate."——Speakers before the Tri-County Clinical Society in Arkadelphia, July 26, included Drs. Solomon F. Hoge on early syphilis; Paul L. Mahoney, differential diagnosis between otitis media and external ear infection; Francis W. Carruthers, fractures, and J. O. Hall, D.D.S., oral health. All were from Little Rock.

ILLINOIS

Encephalitis Decreases.—That epidemic encephalitis is on the wane in Illinois is indicated in reports of twenty-four new cases of the disease for the week beginning September 10. This number compares with a total of forty-nine for the preceding week. The Illinois State Department of Health reports that the bulk of the cases continue to occur in the three main epidemic centers: Vermilion County, eight; Fulton County, four, and Peoria County, three.

Society News.—At a meeting of the Peoria City Medical Society, September 18, Dr. Max Thorek, Chicago, discussed a new method of obliterating the gallbladder by electrosurgical means.——The St. Clair County Medical Society was addressed in Belleville, September 5, by Dr. Edmund Bechtold on "Economic Conditions as I Found Them in the Scandinavian Countries and in Russia," and by Dr. Frederick V. Emmert, St. Louis, in East St. Louis, September 6, on "Diagnosis and Treatment of Cervices in Office Practice."

Chicago

Founders' Day at Northwestern.—Ceremonies on Tuesday, October 2, will mark the opening of the seventy-sixth annual session of Northwestern University School of Medicine. The Founders' Day address will be delivered by Leslie B. Arey, Ph.D., Robert L. Rea professor of anatomy, on "Old Ideals in Modern Medicine." A feature of the celebration will be the unveiling of an oil portrait of Dr. William E. Morgan, emeritus professor of surgery and clinical surgery, Loyola Uni-

versity School of Medicine, and a graduate of Northwestern, class of 1882. The portrait, presented by Dr. Charles F. Sawyer, clinical professor of surgery at Loyola, will be placed in the Archibald Church Library. Dr. Sawyer graduated from Northwestern in 1904.

Dr. Bachmeyer Succeeds Dr. Houghton at University Clinics.—Dr. Henry S. Houghton, who since January 1 has been associate dean of the Division of Biological Sciences and director of the University Clinics, University of Chicago, has resigned to become advisory representative of the China Medical Board, effective January 1. The new director of clinics is Dr. Arthur C. Bachmeyer, who until his resignation, September 15, had been dean of the University of Cincinnati College of Medicine, Cincinnati, for nine years. Dr. Bachmeyer, following his resignation as dean, continued as superintendent of the Cincinnati General Hospital and as professor of hospital administration. He has been head of the hospital for twenty years. Dr. Houghton, until his affiliation with the University of Chicago, had been dean of the University of Iowa College of Medicine since 1928. The China Medical Board, an agency of the Rockefeller Foundation, owns and supports the Peiping Union Medical College.

INDIANA

Cancer Program.—Dr. Marcus W. Lyon Jr., South Bend, will open the meeting of the St. Joseph County Medical Society, October 2, with a paper on "History and Etiology of Cancer." This is the first paper in a series to be given in a cancer education program sponsored by the society, newspapers reported.

Indiana in Morbidity Reporting Area. — Indiana was recently made a part of the U. S. Public Health Service morbidity reporting area, according to the state medical journal for September. Only those states that have a complete and reliable record of communicable diseases are included in this reporting area.

Deaths from Encephalitis Increase.—Twenty-one cases of encephalitis with eleven deaths were reported in the outbreak in Evansville up to September 19, according to the Chicago *Tribune*. One death and twenty-nine cases of the disease had been reported for Washington and vicinity, September 19. Earlier reports stated that seventy cases had been treated in Hartford City.

Lilly Research Laboratories to Be Dedicated.—The formal opening of new headquarters for the Lilly Research Laboratories, Indianapolis, will take place, October 11. The program will open with an informal luncheon at the laboratories. Mr. Eli Lilly will be chairman of the dedication ceremonies, which will begin at 2 o'clock. This program will include as speakers Mr. J. K. Lilly, on "Research in Manufacturing Pharmacy"; Irving Langmuir, Ph.D., Schenectady, N. Y., "Unpredictable Results of Research"; Sir Frederick Banting, Toronto, "The Early Story of Insulin," and Sir Henry Dale, London, "Chemical Ideas in Medicine and Biology." At a formal dinner in the evening at the Indianapolis Athletic Club the speakers will be Sir Henry; Drs. Elliott P. Joslin and George R. Minot, Boston; Frank R. Lillie, Ph.D., Chicago; Dr. Charles R. Stockard, New York; Dr. George H. Whipple, Rochester, N. Y.; Carl Voegtlin, Ph.D., Washington, D. C., and George H. A. Clowes, Ph.D., Indianapolis.

IOWA

Secretary Honored.—Dr. Harry W. Vinson, Ottumwa, for many years secretary of the Wapello County Medical Society, was guest of honor at a dinner, September 5. He was presented with a desk set by Dr. Smith A. Spilman, Ottumwa, on behalf of the society, and an album containing the signatures of all those who attended the meeting, by Dr. William C. Newell, Ottumwa.

Outbreak of Malaria.—Newspapers announced an epidemic of malaria in and about Booneville, September 6, nineteen cases having been reported in a C C C camp. Inspection showed larvae of mosquitoes in the drainage system, which was connected with two other sewerage systems from Booneville. A drive to clean up breeding places of mosquitoes was begun as the result of the outbreak.

Graduate Courses.—Diagnosis and treatment in internal medicine and surgery will be the principal subjects of consideration in two courses to be given by the speakers' bureau of the Iowa State Medical Society this fall. Members of the faculty of the State University of Iowa College of Medicine will present the courses, which, this year, will be run separately in three different centers instead of together as has been done in the past. The medical course is to be offered in three centers in the eastern section of the state and the surgical course in three centers in the central part. Two hours one evening each week will be devoted to the courses, which will run for ten weeks. The fee for each is $10.

MAINE

Clinical Meeting.—Dr. Timothy Leary, Boston, will be the speaker at the dinner of the Maine Medical Association during its clinical session, October 4, at the Eastland Hotel in Portland. His subject will be "Coronary Sclerosis—A Metabolic Disease, with Analogies to Diabetes, Gout and Obesity." The Cumberland County Medical Society will be host at the dinner. Previous to this, a reception will be held at the home of Dr. Edville G. Abbott, Portland, for members of the state association. No formal papers will be presented at the clinical session, the program to be devoted to clinical demonstrations in medicine and surgery.

MASSACHUSETTS

Society News. — The Plymouth District Medical Society was addressed in July, among others, by Drs. Arial W. George on x-ray diagnosis of fractures; John D. Adams, back sprains; Herbert H. Howard, prostate and backaches; Charles A. Knowles, rupture of the spleen, and Cadis Phipps, diagnosis and treatment of vascular diseases.——Dr. Francis T. Hunter, Boston, spoke on hematology before the Worcester District Medical Society in Worcester, September 12.

MICHIGAN

State Medical Election. — Dr. Grover C. Penberthy, Detroit, was chosen president-elect of the Michigan State Medical Society at its annual meeting in Battle Creek, September 11-13. Dr. Richard R. Smith, Grand Rapids, was inducted into the presidency. At this session, the house of delegates decided to defer action on its "Mutual Health Service Plan." A few days before the meeting, the committee on medical economics released its report on "Post Graduate Medical Education and the Needs of the General Practitioner," a brochure of sixty-four pages, an attempt to consider the subject in a comprehensive form.

Centers of Graduate Study.—The establishment of three additional teaching centers has been announced by the department of postgraduate study, University Hospital, Ann Arbor. In these centers, Flint, Grand Rapids and jointly in Battle Creek and Kalamazoo, a course of instruction will begin the first week of October to continue for eleven weeks. Five hours one day each week will be devoted to the course. Intended especially for the general practitioner, the program is identical for each center, consisting of case demonstrations and bedside clinics in traumatic and emergency surgery, fractures, cardiology, metabolic diseases, gynecology and obstetrics, pulmonary disease, gastro-enterology and pediatrics.

MINNESOTA

Midwife Also Practices Medicine.—Mrs. Regina Krzan Dlugi, a licensed midwife who lives on a farm near Little Falls, was recently warned to stop practicing medicine without a license, following an investigation by the state board of medical examiners. Mrs. Dlugi had been selling roots and herbs and medicines.

Hobby Exhibit. — Members of the Olmsted-Fillmore-Houston-Dodge County Medical Society held a "hobby show" at the Rochester Country Club in July, consisting of an exhibit of etchings, paintings, unusual photography, wood carving, sculpture, coins, pottery and guns. Included among those participating were:

Dr. Porter P. Vinson, hobby of gardening depicted by a figure of a man made up from a dark shirt with garden instruments.

Dr. Laurence F. V. Sutton, Mazeppa, a 200 year old Belgian print.

Dr. Charles G. Sutherland, notebook containing records of stories heard.

Drs. Duncan M. Masson and Arthur H. Sanford, Leica photographs, enlargements made from motion picture films.

Dr. John E. Crewe, paintings.

Dr. Frederick A. Willius, pen and ink sketches of old streets, quaint architecture, home scenes and bridges.

Dr. Albert M. Snell, old coins from Europe, Asia and the United States.

Dr. Monte C. Piper, pioneer relics, namely, an old millstone, a grain shovel and a solid handmade walnut mold used for casting metal wheels.

Dr. Louis B. Wilson, old firearms from Italy, Austria, Germany, Czechoslovakia and elsewhere.

Dr. Walter H. Judd, Chinese embroidery and clothing.

Society News.—Dr. Lewis S. Jordan, Granite Falls, superintendent of the Riverside Sanatorium, was elected president of the Minnesota State Sanatorium Association at the recent annual meeting in Cannon Falls.——Dr. George I. Badeaux,

Brainerd, was elected president of the Northern Minnesota Medical Association at its annual meeting in Brainerd, September 10-11; Dr. Arthur N. Collins, Duluth, vice president, and Dr. Oscar O. Larsen, Detroit Lakes, secretary. The next annual meeting will be held in Duluth.

NEW YORK

Hospital News. — Dr. Louis Faugeres Bishop Jr., New York, began a series of lectures on electrocardiography, August 14, at John T. Mather Memorial Hospital, Port Jefferson.——Drs. Henry G. Hollenberg, Cincinnati, and Luther W. F. Oehlbeck, Rochester, have recently been appointed to the staff of Clifton Springs Sanitarium and Clinic, Clifton Springs.

Society News.—Charles W. Ballard, Ph.D., New York, addressed the Westchester County Medical Society, September 18, at Grasslands Hospital, Valhalla, on "Prescriptions and the Pharmacopeia."——Medical record librarians of twelve hospitals in Westchester County have organized the Association of Medical Record Librarians of Westchester County, with Edith T. Fields of Grasslands Hospital, Valhalla, as president, and Martha Davidson, Mount Vernon Hospital, Mount Vernon, as secretary.——The New York State Association of Public Health Laboratories will hold its midyear meeting at the state laboratory in Albany, November 2.

New York City

Personal. — Dr. Bruno Gebhardt, director of the German Museum of Hygiene, Munich, was guest of honor at a luncheon given by public health officials, August 24; he attended the meeting of the American Public Health Association in Pasadena.——Dr. John E. Jennings, Brooklyn, has been appointed a member of the New York City Board of Health.

Examination of Food Handlers Discontinued.—Through an amendment to the sanitary code adopted September 18, the New York City Department of Health has abolished the yearly examination of food handlers except for those engaged in the milk industry. Dr. John L. Rice, city health commissioner, emphasized in a statement that hereafter greater attention would be given to the personal hygiene of food handlers and to the entire matter of food sanitation. The action, reversing a policy adopted eighteen years ago, was based on two objections. First it was said that a clean bill of health given to a food handler may have no significance a week later. A second objection arises from the fact that the presence of certain infectious conditions can be determined only by repeated painstaking examinations, which are practically impossible; the cost would be very great and the benefits to the public small. Dr. Rice declared, in that hundreds of thousands of dollars would be spent to discover at most only a few potential spreaders of disease. It is also pointed out that the health department has more effective measures available for dealing with the possible spread of infection by food handlers. Overreliance on the physical examination of food handlers has brought with it a diminishing emphasis on personal hygiene and matters of general sanitation, Dr. Rice continued. It is proposed now to lay more emphasis on the simple matter of frequent hand washing and on sterilization of eating and drinking utensils. The commissioner stated that during 1933 the department had issued 361,289 cards to food handlers, the activity taking up the full time of a considerable number of clerks as well as the time of a physician supervisor. To keep the cards on which the results of the examinations are recorded, filing cabinets and valuable space are required. Altogether the commissioner feels that this is an unprofitable procedure, for the records, he says, have little value. Judged by the criterion of reducing disease and death, the cost of the health examination of food handlers is enormously out of proportion to the returns yielded to the people of the city.

OHIO

Year Book Available.—The Hundred Year Book of the College of Medicine, Ohio State University, will be ready for delivery during the annual meeting of the Ohio State Medical Association, October 4-6. It contains a complete history of the medical school from 1834 to 1934, including the report of the hundredth anniversary celebration and the addresses made on that occasion. Subscriptions to the book are $10, and checks may be made payable to A. J. Linn, secretary to the dean of the college of medicine, Columbus.

Diphtheria Campaign in Toledo.—The Toledo Academy of Medicine announces a campaign for the immunization of all Toledo children against diphtheria, to be carried on from October 7 to November 7 in cooperation with the city health department and various organizations. It is planned that private physicians shall do the work for children of their own patients and that the children of indigents will be taken care of through relief funds. Dr. Walter W. Beck is chairman of the committee in charge of the campaign.

District Society Meeting.—The Northwestern Ohio Medical Association will hold its ninetieth session in Toledo, October 2, at the headquarters of the Toledo Academy of Medicine. Guest speakers will be:

Dr. Douglas Quick, New York, Diagnosis of Malignancy; Treatment of Malignancy.
Dr. Frederic Maurice McPhedran, Philadelphia, Diagnosis of Tuberculosis in Infancy and in Grade School Age; Diagnosis of Tuberculosis in Adolescence and Adult Life.
Dr. Raphael Isaacs, Ann Arbor, Mich., Newer Developments in Diagnosis and Treatment of Diseases of the Blood Forming Organs.
Dr. Milton B. Cohen, Cleveland, Principles and Practices in the Management of Patients with Allergy.
Dr. Alvin R. Morrow, Chicago, Head Injuries.

Society News.—Dr. Frank C. Huth, Cambridge, addressed the Guernsey County Medical Society, August 16, on mammary tumors.——Dr. Claud R. G. Forrester, Chicago, addressed the Summit County Medical Society in Akron, September 4, on "Reduction of Acute Fractures Under Local Anesthesia Together with Ambulatory After-Care."——Dr. Hugh Cabot, Rochester, Minn., addressed the Academy of Medicine of Cleveland, September 21, on "New Conceptions of the Diagnosis and Treatment of Urinary Tract Infections."——Dr. Carl J. Wiggers, professor of physiology, Western Reserve University School of Medicine, Cleveland, gave a series of lectures on recent advances in applied physiology before the Mahoning County Medical Society, Youngstown, during the past month. ——Drs. Grover C. Penberthy and William H. Gordon, Detroit, addressed the Hancock County Medical Society, Findlay, September 6, on surgical management of burns and treatment of diabetes during pregnancy, respectively.

RHODE ISLAND

Society News.—At the quarterly meeting of the Providence Medical Association, September 6, speakers were Drs. George A. Elliott, Middletown, Conn., on "Paraldehyde and Other Hypnotics: Recent Developments"; Arthur H. Ruggles, Providence, "Function of a Hospital for Children with Nervous Diseases," and Charles Bradley, East Providence, "Nervous and Mental Problems of Childhood."——Dr. Ellen A. Stone, Providence, has retired after twenty-one years as superintendent of child hygiene in the city health department.

TENNESSEE

Health at Memphis. — Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended September 15, indicate that the highest mortality rate (17.1) appears for Memphis, and that the rate for the group of cities as a whole was 9.9. The mortality rate for Memphis for the corresponding week of 1933 was 15.7 and the group of cities, 9.5. The annual rate for the thirty-seven weeks of 1934 was 11.5, as compared with 11 for the corresponding period of last year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have large Negro populations may tend to increase the death rate.

Society News.—Drs. William C. Chaney and John L. Jelks, Memphis, addressed the Tri-County Medical Society (Carroll, Henry and Weakley counties) at McKenzie, August 14, on "Practical Considerations of Gastro-Intestinal Allergy" and "Rectocolonic Diseases," respectively.——Speakers at a meeting of the Roane, McMinn, Monroe, Blount and Loudon Counties Medical Society at Kingston, August 22, were Drs. John B. Youmans, Nashville, on "Noninstrumental Diagnosis of Common Cardiac Arrhythmias"; James E. Carson, Maryville, "Perinephritic Abscess," and William J. Cameron, Sweetwater, "Treatment of Endocervicitis by Electrocoagulation."——At a meeting of the Nashville Academy of Medicine, September 4, Dr. James Frazier Binns discussed "The Management of Diarrhea of Infancy."

TEXAS

Bill Introduced.—H. 55-XXX proposes to forbid the sale of barbituric acid "derivatives and compounds thereof under any copyrighted or chemical name," except on the prescription of a licensed physician. The proposed act, however, is not to affect the sale of such drugs by wholesale drug houses to retail pharmacies or to physicians. A licensed physician is free to dispense these drugs, but, apparently, will be able to buy them from retail pharmacies only on prescription.

VERMONT

State Medical Meeting at Burlington.—The one hundred and twenty-first annual meeting of the Vermont State Medical Society will be held in Burlington, October 4-5, at the Fleming Museum. A symposium on the kidney will be presented by four New York physicians: Drs. Arthur M. Fishberg, Paul W. Aschner, Moses Swick and Albert A. Epstein. Dr. Dean Lewis, Baltimore, will give an address and other guests will be Drs. John M. Bergland, Baltimore, on "Obstetrical Complications"; Henry D. Chadwick, Boston, "Prolongation of Life"; Winchell McK. Craig, Rochester, Minn., "Physiology, Pathology and Treatment of Craniocerebral Injuries." Vermont physicians on the program are: Drs. Maurice N. Bellerose, Rutland, "Intervertebral Pressure"; Clarence F. Ball, Rutland, "Radiation Treatment of Tumors—Late European Developments," and Charles K. Johnson, Burlington, "Atropine Fever in Early Infancy." The annual banquet will be at the Ethan Allen Club Thursday evening, October 4.

WASHINGTON

Half a Century in Medical Practice.—More than 100 physicians attended a dinner in honor of Dr. Lewis R. Dawson, Seattle, August 13, marking his fiftieth anniversary in medical practice. Dr. Dawson was graduated from the University of Michigan Medical School, Ann Arbor, in 1882 and licensed to practice in 1884.

Society News.—Drs. William C. Woodward, Chicago, and Walter C. Woodward, Seattle, will address the King County Medical Society, Seattle, October 1, on malpractice and malpractice suits. Drs. Clyde W. Countryman, Spokane, and James E. Hunter, Seattle, addressed the society, September 17, on "The Postoperative Enema" and "Functional Disorders of the Colon," respectively.

WISCONSIN

State Medical Election.—Dr. Ralph M. Carter, Green Bay, was chosen president-elect of the State Medical Society of Wisconsin and Dr. Thomas J. O'Leary, Superior, was installed as president at the annual session in Green Bay, September 10-13. Dr. Gunnar Gundersen, La Crosse, was elected speaker of the house of delegates to succeed Dr. Carter. The 1935 convention will be held in Milwaukee.

GENERAL

Changes in Status of Licensure.—The following action was taken at the meeting of the Florida State Board of Medical Examiners in Jacksonville, June 12:

Paul C. Ronning, Lake Worth, license revoked on the ground that it had been "fraudulently obtained."

Shoe Companies Stop Using the Title "Dr."—Six shoe companies in New York and New England have signed agreements to discontinue misrepresentation in the sale of shoes, the Federal Trade Commission has announced. Complaints against the companies charged that all used the word "doctor" or abbreviation "Dr." in such manner as to lead buyers to believe the shoes were designed under a physician's supervision and contained special orthopedic features, the report stated.

News of Epidemics.—Eighteen cases of malaria occurred in Aurora, Portage County, Ohio, in the two weeks preceding September 8.——Opening of schools in Spokane, Wash., was delayed indefinitely in an order issued by the city health officer, August 30, because of the prevalence of poliomyelitis. A report of the state health department stated that eighty-five cases had occurred in the state in July and fifty-seven during the first two weeks in August.——Fifty-seven cases of poliomyelitis were reported in Montana during the week ended September 1; 179 cases have occurred in the state since June, centered principally in Helena, Billings and Great Falls.

Bequests and Donations.—The following bequests and donations have been announced:

Lenox Hill Hospital, $33,333; St. Vincent's Hospital, $25,000; New York Foundling Hospital, $25,000; Home for Incurables, $25,000; Presbyterian Hospital, $20,000 for cancer research; Seton Hospital, $15,000 by the will of the late Mrs. Madeline L. Ottman.

Jewish Hospital, Brooklyn, $2,000 by the will of the late Gittle Kurtz.

St. Catherine's and Bethany Deaconess hospitals, New York, $1,000 each by the will of the late Amelia A. Scheidt.

The Tuberculosis Preventorium, Farmingdale, N. J., $1,000 by the will of Marcus M. Marks.

Hospital for Joint Diseases, New York, $15,000; New York Academy of Medicine, $10,000; American College of Surgeons, $1,000; Gorgas Memorial Institute, $1,000, and New York Physicians Mutual Aid Association, $1,000 by the will of Mrs. Perla A. Brickman.

St. Vincent's Hospital, New York, $1,050 by the will of Elizabeth Thompson.

Huntington Hospital, Huntington, L. I., $5,000 by the will of the late Miss Abbie E. Jones.

White Plains Hospital Association, White Plains, N. Y., $1,000 by the will of the late Ambrose F. McCabe.

Society News.—Dr. John H. Hale, Nashville, Tenn., was elected president of the National Medical Association at its recent annual meeting in Nashville; the next annual meeting will be held in New Orleans in 1935.——Officers elected at the recent annual meeting of the Thirteenth Annual Convention of the International Association of Police and Fire Surgeons in Philadelphia were Drs. Harry M. Archer, New York, president; George L. Wright, Syracuse, N. Y., vice president, and Arthur Wildman, Brooklyn, secretary.——Dr. John S. Hibben, Pasadena, Calif., was chosen president-elect of the American Congress of Physical Therapy at the annual meeting in Philadelphia recently. Dr. William L. Clark, Philadelphia, was installed as president and the following were elected vice presidents: Drs. William Bierman, New York, Frederick L. Wahrer, Marshalltown, Iowa, Walter P. Grimes, Kansas City, and Frank H. Krusen, Philadelphia. The gold key of merit of the congress was awarded to Dr. Leroy W. Hubbard, Mount Vernon, N. Y.; William W. Coblentz, Ph.D., Washington, D. C.; Henri Bordier, Lyons, France; Oscar Bernhard, St. Moritz, Switzerland, and Franz Nagelschmidt, formerly of Germany, now of London.——Dr. Walter H. Brown, Palo Alto, Calif., was chosen president-elect of the American Public Health Association at the annual meeting in Pasadena, September 4-7. Dr. Eugene L. Bishop, Nashville, became president.——The thirteenth annual congress of anesthetists will be held in Boston, October 15-19. Societies that make up the congress are the Associated Anesthetists of the United States and Canada, the International Anesthesia Research Society, Eastern Society of Anesthetists and the Mid-Western Association of Anesthetists.

HAWAII

Aloha Picnic.—The Honolulu County Medical Society held an "Aloha picnic" at Lanikai, Oahu, September 9, in honor of Col. Ernest L. Ruffner. The picnic was preceded by a golf tournament. Colonel Ruffner has been department surgeon of the Hawaiian Department of the U. S. Army for several years.

Graduate Lectures.—Dr. David P. Barr, Busch professor of medicine, Washington University School of Medicine, St. Louis, gave three lectures before the Honolulu County Medical Society, September 12-14, under the auspices of the committee on postgraduate instruction. His lectures were entitled "The Pituitary Gland," "Hypoglycemia and Related Conditions" and "Parathyroid Gland and Calcium Metabolism."

CANADA

Institute of Parasitology.—The official opening of the new Institute of Parasitology at Macdonald College, McGill University, Montreal, took place June 27. The government of Quebec provided the building and the National Research Council has undertaken the maintenance. Henry M. Tory, LL.D., president of the National Research Council, made the official address at the opening ceremony and Thomas Wright Moir Cameron, Ph.D., director of the institute, accepted the keys. A part of the building has been in operation for about eighteen months (THE JOURNAL, Aug. 27, 1932, p. 771).

Endowment for Department of Neurology.—*Science* reports that the Rockefeller Foundation has appropriated $1,000,000 to McGill University, Montreal, as an endowment for the department of neurology. This fund is to take the place of $50,000 contributed annually to carry on work in neurology under the direction of Dr. Wilder G. Penfield. The foundation has previously contributed $232,000 toward the erection and equipment of a building for the department (THE JOURNAL, June 18, 1932, p. 2220). The province of Quebec also makes an annual grant of $20,000 and the city of Montreal, $15,000 to the institute.

FOREIGN

Prize for Encephalitis Research.—The University of Bern, Switzerland, announces that a prize of 1,000 francs will be awarded for research on epidemic (lethargic) encephalitis through a foundation recently established. Information may be obtained from the dean of the medical faculty of the university.

Personal.—Dr. Samuel James Cameron has been appointed regius professor of midwifery at the University of Glasgow to succeed Prof. J. M. Munro Kerr, who retires September 30.——Prof. George Grey Turner, professor of surgery in the University of Durham, England, has been appointed to the chair of surgery in the new British Post-Graduate Medical School at Hammersmith.

Obstetrics Prize.—A prize of 10,000 Belgian francs is to be awarded every four years by the International Foundation of Gynecology and Obstetrics, originated by the International Congress of Gynecology and Obstetrics and the Société Belge de Gynécologie et d'Obstétrique, the latter being legal managers of the fund. The prize will be given to the author of the best paper in gynecology or obstetrics published in the four years preceding the award. Two copies of the paper, which must be in German, English, Spanish, French or Italian, must be sent to the secretary of the Belgian society (Dr. Max Cheval, 16 Alphonse Hottat Street, Brussels, Belgium) twelve months before the date fixed for the award, July 1938.

International Neurologic Congress in 1935.—Plans for the second International Neurologic Congress, to be held in London July 29-Aug. 2, 1935, have been announced by the committee for the United States, of which Dr. Bernard Sachs, New York, is chairman and Dr. Henry Alsop Riley, New York, secretary. Four topics have been chosen for consideration: the epilepsies, physiology and pathology of the cerebrospinal fluid, functions of the frontal lobe, and the hypothalamus and the cerebral representation of the autonomic system. These subjects will be presented at morning sessions, and afternoon sessions will be devoted to discussion of miscellaneous topics. Any recognized neurologist or psychiatrist may submit titles for presentation at the miscellaneous sessions. Such titles, accompanied by brief abstracts, must be submitted to the United States committee before Jan. 15, 1935, in English, French or German. Those accepted will be forwarded to the secretary general in London for final consideration. The maximum time for presentation will be ten minutes. Candidates for membership may apply either through the national committee or through the secretary general of the congress, Dr. S. A. Kinnier Wilson, 14 Harley Street, London. Thomas Cook and Son are official travel agents for the congress, and arrangements for traveling and hotel accommodations may be made through them. Requests for application blanks and the submission of titles should be made as soon as practicable. In addition to Dr. Sachs and Dr. Riley, members of the committee are Drs. Harvey Cushing, New Haven, Conn.; Charles L. Dana, Woodstock, Vt.; Adolf Meyer, Baltimore, and Frederick Tilney, New York. Dr. Riley's address is 117 East Seventy-Second Street, New York.

Deaths in Other Countries

Georges Dreyer, professor of pathology, University of Oxford, England, since 1907; died August 17, in Sollestedgaard, Laaland, Denmark, of heart disease.

Government Services

New Home of Public Health Service

The National Institute of Health of the U. S. Public Health Service is now occupying its new buildings, the transfer from the old structure to the new quarters having taken more than a year. The buildings comprise a two story administration building housing the library and the director's office, and an I-shaped laboratory building, 234 feet long, three stories high with a basement. Both are constructed of Indiana limestone and form the western end of the government's building program at Washington. The new laboratory building is entirely occupied by the division of pathology and bacteriology. The old north building will be remodeled for other research activities and the housing of animals, while the south building will continue to be occupied by the divisions of pharmacology, chemistry and zoology (THE JOURNAL, June 17, 1933, p. 1946).

CORRECTION

"Modern Clinical Syphilology."—The review of "Modern Clinical Syphilology," edition 2, by Dr. John H. Stokes (Philadelphia, W. B. Saunders Company, 1934) published in THE JOURNAL, August 25, page 627, contains the erroneous statement that figure 115 has numerous errors, which should be corrected in the next revision. The impression of error arose from a misunderstanding of the captions of certain columns by the reviewer. The figures as given in the table are correct. The reviewer is also in error in stating that lymphogranuloma inguinale was not even mentioned in connection with the anorectal syphiloma. A brief discussion of this relationship occurs on pages 590 and 958.

Foreign Letters

LONDON

(From Our Regular Correspondent)

Sept. 1, 1934.

Restriction on Use of Automobile Horns

The formation of the Anti-Noise League and other efforts to check noises, which have become such an evil of modern life, have been described in previous letters. An official move in the matter has been made at last. In a broadcast address Mr. Hore-Belisha, minister of transport, announced an innovation for the benefit not only of motorists and pedestrians but also of that section of the population whose point of view has heretofore not been adequately considered—those who live along the roads and whose tranquility is much disturbed by mechanical noises at night. Between the hours of 11:30 p. m. and 7 a. m. the sounding of motor horns will be prohibited in London over a radius of five miles from the central point of Charing Cross. Any motorist who sounds his horn during those hours will be liable to a fine of $8. After this experiment has been made, other localities will be invited to follow suit. This new silent zone should be a relief to those who find it difficult to get a good night's rest. Will the risks of motor traffic be increased? It is thought not, as the pedestrian before stepping on to the road will be warned by the oncoming lights of the vehicle. As to foggy nights, statistics show that low visibility tends to diminish accidents, because the motorist naturally goes more carefully. To eliminate noise altogether is impossible, but the minister of transport will do all in his power. He has appointed a committee of scientists and motor manufacturers to consider and report on the principal causes of noise in mechanically propelled vehicles and the steps that can be taken to limit them. The government is placing at the disposal of the committee the resources of the National Physical Laboratory. The aim will be to discover the means of making automobiles and motorcycles with as silent a mechanism as possible. It is already an offense to use one that causes any excessive noise. It is equally an offense to sound a horn, even in the daytime, on a stationary vehicle except when necessary on the ground of safety.

This prohibition, which was suggested by the Anti-Noise League a year ago, proved an immediate success. The "zone of silence" contains the principal London hospitals, and the evil of interfering with the night's rest of the patients was used as a strong argument. Many letters approving of the regulation have been received by the ministry. Before it came into force Capt. J. H. Johnson, secretary of the Royal Westminster Hospital, wrote to the ministry asking whether consideration could be given to "the dire necessity" of mitigating to some extent the unpleasant condition with which the patients of his hospital had to contend. He said that the skill of the surgeons was vitiated to a great extent by the disturbance of the patient's rest and that a deleterious effect on the efficiency of the resident staff was also produced. As an experiment he occupied for a night a private room in the hospital. Though in full health and strength, the experience proved a nightmare. A total of 408 vehicles passed in six hours, more than one a minute. These included heavy motor vehicles, such as milk trucks. During his vigil the secretary noticed that forty-four omnibuses stopped outside a neighboring theater and that at least 90 per cent of them hooted vigorously.

The success of the prohibition in London has been so great that, after a delay of only a few days, the minister of transport has extended the regulation forbidding the sounding of horns or other instruments of warning to all roads in Great Britain in built-up areas; that is to say, all roads on which there is provided a system of street lighting by lamps placed

not more than 200 yards apart. But the order does not apply to vehicles used for fire department, ambulance or police purposes. It is noteworthy that this silencing by night of the warning noises of automobiles has not led to any increase of accidents.

The Taxation of Surgical Instruments

Since England has adopted protection, all the business interests have been coming forward, one by one, demanding a tax on the articles corresponding to those they produce which come from abroad. Everything used from the cradle to the coffin will soon be taxed, even articles used in medicine and surgery. It has been explained how a tax imposed on imported insulin for unfortunate persons with diabetes proved too much for the protectionist government. But a tax on surgical instruments will fall, at first at any rate, only on surgeons. The Import Duties Advisory Committee reports that foreign competition is particularly severe in the more commonly used instruments, which may be regarded as standard lines. It says that "a healthy surgical industry" in this country is desirable in the interest of progress in surgery, and that this depends on the retention by British manufacturers of a substantial proportion of the home market in the standard lines as well as in specialized types. The committee has recommended a tax of 20 per cent.

The Danger of Using Gasoline for Cleaning Garments

In spite of the fatalities that occur from time to time in the use of gasoline for cleaning fabrics, the danger is not sufficiently appreciated. An inquest has been held in London on two women, aged 36 and 44, who lost their lives in an explosion that occurred while they were cleaning clothing with gasoline. They were doing this in a small area outside a kitchen in which there was a lighted boiler. A double explosion occurred. The husband of one of the women said that he thought the explosion was caused by rubbing. Certain fabrics would ignite by friction. He had known a death caused by a man washing his hands in aviation spirit. An inspector of the London County Council gave evidence. He said that a large amount of gasoline vapor would be released in the cleaning process. There was a space of about a quarter of an inch under the kitchen door, and the vapor would flow into the kitchen, where the heat of the stove would set it alight. The coroner said that, if gasoline was used for cleaning, this should be done outdoors and not in the confined space of an area. Though the danger of ignition by friction was mentioned in the evidence, one way in which it has been suggested that this may occur—by the generation of electric sparks—was not referred to.

The Danger of Anthrax from Foreign Shaving Brushes

In the admiralty orders to the fleet, a warning is given against the use of foreign shaving brushes. It is stated that a case of anthrax has recently occurred which is believed to have resulted from the use of a shaving brush purchased on shore, and personnel are warned that the fact that a brush is marked "sterilized" is no guaranty that it is free from anthrax infection unless it is of British manufacture. In shaving only service shaving brushes and other sterilized British-made shaving brushes should be used. Foreign brushes should be suspected even if they have been in use for some time, as the anthrax spores may be present in the setting and be released as this becomes softened in use. Therefore such brushes should be destroyed and replaced by British-made ones.

The Undiminishing Maternal Mortality

The report of the health officer for the county of Middlesex, Dr. John Tate, shows that the rate of maternal mortality in the county for 1933 rose from 3.85 deaths per thousand births in 1932 to 4.77 for 1933. Women's deaths from causes connected with pregnancy and childbirth numbered 117, an increase of 19 compared with 1932, although 936 fewer live births took place. The figure 117 was the highest ever recorded for Middlesex. The maternal mortality for the whole country for 1933 was 4.42 per thousand live births, which, though lower than that of Middlesex, was the highest recorded for England and Wales for more than thirty years. Dr. Tate points out that since the beginning of the century maternal mortality rates have shown no diminution and, if anything, have tended to rise. He outlines great reforms that have taken place and says that but for them the maternal mortality would have risen to a considerable height. It seems therefore that these favorable influences must be counterbalanced by some growing adverse factor or factors, possibly connected with the changing habits or mode of living, the nature of which can only be a matter for speculation. The birth rate for the county showed a further sharp fall and was the lowest recorded for any year, not excepting the war years. If the fall continued, the time was not far distant when the population would come to a standstill or even begin to decline.

PARIS

(From Our Regular Correspondent)

Aug. 8, 1934.

The Problem of Expert Witnesses

For some time many psychiatrists have demanded that in court, when the question of a delinquent's responsibility is raised by the prosecutor, another expert witness be present, in addition to the expert appointed by the court, to represent the interests of the defendant. The results of the practice have been unsatisfactory. The judge, having had no training in psychiatry, delivers his opinion without true discernment when he has to choose between two opposing technical opinions. In a criminal action, when the decision rests with the jury, it is still worse. An expert witness proposed by the attorney for the defense conducts himself in essentially the same manner as the attorney who selects him, and his mission consists in awakening a doubt in the minds of the jurors with regard to the conclusions of the official expert, and in saving the accused from being sentenced. If the accused is rich, he can pay for an expert, possibly a professor of legal medicine, whose influence impresses the judges or the jurors, which latter are commonly persons with little legal experience. The appointment of an expert witness for the defense is not a right that can be demanded. But a large number of psychiatrists want the appointment of an opposing expert witness to be made compulsory and it is not difficult to divine that they envisage the prospect of ample fees, whereas, when they function as official experts, the legal schedule allows them only modest fees.

The question was brought up recently by the Congress of Legal Medicine, at Lille, where it received prolonged consideration. Drs. Raviart and Vullien in their paper emphasized that the penal code does not provide a solution of such delicate problems—responsibility or irresponsibility; prison or psychiatric hospitals. To remedy this state of affairs, it was proposed to permit the appointment of an opposing expert witness to aid in passing on the sanity of the defendant. This innovation, the speakers stated, does not appear to solve the difficulties. The opponents of the reform urge that an expert witness should be above all influence of party considerations. He is the appointee of the court and not of the defense. There should be no confusion between the two issues. His mission is to promote justice impartially. But the expert witness of the defense will always have the set task of bringing up all important facts and all symptoms suitable for casting doubt on the mentality of the accused. The expert witness of the court, mindful of both the interests of the accused and the needs of social defense, and animated by a true medicolegal spirit, will continue, as in the past, to base his conclusions on recognized scientific beliefs. Between the two expert witnesses,

with such widely different points of view, agreement will seldom be possible. An arbiter will be indispensable in a large majority of cases, and as it will often devolve on the judge to choose between the conflicting opinions, there would soon be a lapse back into the present state of affairs. It appears therefore, the speakers stated, that efforts must be directed in another quarter. An entirely different reform must be brought about. A law should be passed similar to one in Belgium, which effects a harmonious accord between charitable ideals and the requirements of social protection. In the discussion that followed this presentation, Charpentier of Paris, Crouzon of the Salpêtrière Hospital, Guillaut of the Charité-sur-Loire, Dide of Toulouse, Stanesco of Bucharest, and likewise Me Kah, participated. The congress approved these opinions: 1. The appointment of an opposing expert witness to promote the cause of the defendant is desirable. 2. A larger list of experts should be available. 3. The adoption of a law of social defense patterned after the Belgium law is recommended. These resolutions will be sent to the Society of Legal Medicine, which will hold its congress in Paris at an early date.

Laboratory for the Examination of Aviation Pilots

At the Bourget aerodrome, near Paris, a physiologic laboratory called the Pavillon Paul Bert has been established and placed in charge of Dr. Garsaux. The new laboratory is provided with modern equipment for research on disorders occurring in pilots as the result of flying, and for the examination of pilots. An enormous caisson in which pilots can be enclosed enables the examiner to study what effects changes in barometric pressure have on them. Other types of apparatus record on charts their emotional reactions, the degree of fatigue, and the like.

Dr. Auguste Marie

The death of Dr. Auguste Marie, at the age of 68, is announced. Dr. Marie was an eminent psychiatrist of the contemporary French school. Until his retirement, three years ago, he had been director of the large St. Anne Hospital, the most important of its kind in Paris. He was the first physician in France to apply malaria therapy in the treatment of dementia paralytica. In association with Levaditi, he introduced the distinction of neurotropic syphilitic viruses. His published works include research on the doctrines of Freud, sensory perversions, and the nature of artistic productions of mental patients. He organized exhibits of drawings and paintings of patients in the St. Anne Hospital and caused thereby no little confusion in the ranks of the art critics. During the war, in spite of his age, he served as physician in a crew of stretcher bearers and suffered a gunshot wound of the cranium. He was the founder of a society for the rendering of aid to mental patients discharged from psychopathic hospitals and a Commander of the Legion of Honor.

BERLIN

(From Our Regular Correspondent)

Aug. 6, 1934.

New Regulations Concerning the Universities

In addition to the changes previously described, further provisions affecting the universities and higher institutions of learning have been enacted. Rust, the federal minister of education, has elaborated plans to secure, at all German universities and higher institutions of learning, a uniform administration, in line with the national-socialist conception of the state, in the prosecution of learning and research, and in the selection of professors. In accordance with this decree, every vacant professorial chair must be reported to him, with an exact description of the nature of the subjects treated, and, after completion of negotiations in connection with the selection of a new occupant, his approval of the appointment must be secured. Before any scientific institutes can be closed or new ones opened, his consent must be obtained. Also any fundamental changes in the curriculums or in the stipulated forms of examinations must have his endorsement.

R. Hess, the representative of the "leader," has issued a decree providing for a special "university commission" of the national-socialist party, in order to bring about a close understanding between the federal administration and the ministries to whose realm the various decrees, appointments and habilitations belong. This commission will investigate all proposals made by the German Hochschulverband or arising from the national-socialist movement and, if approved, will forward them to the proper ministries. The commission will pass on all plans that are developed by the ministries. Hess will be the head of this commission. Alfred Rosenberg, the representative of the "leader" for the supervision of public education, and Dr. Wagner, the director of the council on public health, are ex officio members of this commission.

Dr. Wagner has the public health service solely in his charge. *Weg und Ziel,* the journal of the national-socialist Aerztebund, has described Wagner's duties in plain terms: "All groups and organizations of the national-socialist party and the public works association, which have to do with the public health, are under the control of Dr. Wagner in his capacity of confidential adviser of the representative of the 'leader.' That signifies that in this important field, today the will and the opinions of a single man exert an absolute control. From questions concerning the filling of vacancies in the medical faculties to problems affecting the fee schedules and the organizations of nurses, the decisive national-socialist authority is in the hands of one person—a fact whose significance will not be fully understood until later."

Measures have been adopted to check the flood of new university students (THE JOURNAL, March 3, p. 710). In the summer of 1934 the number of students showed a decline of 13,884, or 10.4 per cent of the total matriculation of the summer semester of 1932. Of the total number of students at German universities, 97,687 were males and 18,035 were females. This shows a marked decline since the summer semester of 1931. The new matriculations for the summer semester 1931 were males 17,119, females 4,664, or a total of 21,783; for 1932 they were males 15,259, females 3,508, or a total of 18,767, and for 1933 they were males 10,412, females 2,586, or a total of 12,998.

The decline in the number of new students matriculating for the summer semester of 1933 was 5,769, or 30.7 per cent. As the result of an agreement entered into in March 1933 by the various German *länder,* a total of 8,341 graduates (about 19.9 per cent) of secondary schools were advised to forego university study. The percentage of graduates thus dissuaded varies greatly in the several *länder,* the total range lying between 7.47 and 32.23 per cent. The total number of foreign students matriculated for the summer semester of 1933 was 5,484, which denoted a decline of 1,074 (16.38 per cent) as compared with the summer semester of 1932.

There has been considerable talk about the reorganization of the student body. There is to be a general work service plan for the German student body, the chief requirement of which is that it shall bring the need of scientific work into harmony with the storm troop service, the emergency work service, comrade training, demands of the student organizations, the *fachschaftsarbeit* and the work of the national-socialist league. The first attempts to establish a work service for students were fraught with difficulties. An endeavor is being made to create next semester a work service that will take account of the necessities of scientific work. After entering on his duties, the newly appointed leader removed from office (to take effect at once) all the leaders of the German student

body. At the end of August the various local leaders will meet in a *reichsführerlager* (federal camp), where they will receive the new instructions for the work of the next semesters. Such "camps" are now frequently organized. Special camps for medical students have not been provided as yet, although "scientific camps" have been created. In a report on such a camp one reads: "The conception of science in the nineteenth century was based on objective, freedom of speech and independence of thought and action, while the form of organized academic work was protected by the idea of 'academic freedom.'" This academic freedom has now been rejected by the German university, and likewise the associated individualistic student type. The conception of political science, the beginnings of which are now recognizable, demands also new forms of academic work and academic instruction, and a new student type. Hence the *wissenschaftslager*, or science camp, is an important working principle of the future German university. Such a camp, for example, may be held for several days in a training school for sport, is characterized by soldierly bearing and a spirit of camaraderie; the language of the camp forbids the use of all forms of address based on academic degrees. Sports and hikes have their place beside mental activities. Each day is spent according to a fixed schedule, planned in advance. For example, in the seminar for political science, carefully directed discussions on the seminar lecture are held; also political talks—for instance, on the state and the intellectual life of the nation. The student who holds himself aloof and does not take part in this community endeavor, in which the teacher takes the part of a leader, loses quantitatively the advantages that he hopes to attain by his individual labors; also his scientific conclusions are false. The success of the scientific camp depends on antecedent factors that are not always available as yet. The most important presupposition is a new type of academic teacher, of which there are as yet but few representatives, and they are found chiefly in the younger generation. The scientific camp will be a success only to the extent that it shall prove possible to produce a new type of university instructor.

Hereditary Factors in Gynecology and Obstetrics

Before the Berlin Medical Society, Prof. G. A. Wagner pointed out that the literature contains few extensive observations on the significance of hereditary factors in gynecology. The simultaneous appearance of menarche and menopause in different members of a family is frequently observed. One occasionally observes familial disturbances of menstruation affecting large numbers. With respect to myomas, the question of heredity is difficult to decide. Wagner cited instances in which several siblings were subjected to an operation at a relatively early age. Evidence of racial predisposition to myomas has been noted; for instance, in Jewish women. Abnormalities with respect to the endocrine glands are found in certain families. Wagner himself discovered in 1930 the case of two sisters with pseudohermaphroditism.

In obstetrics, disturbances of the birth mechanism, such as weakness due to labor, placenta praevia and placental hemorrhages, have not been sufficiently studied to determine their tendency to hereditary manifestations. Much more is known, however, concerning the hereditary nature of rickets. Researches on rachitic twins have established beyond doubt the influence of a hereditary predisposition. The question of sterilization in the presence of a rachitic narrow pelvis should be earnestly considered. A narrow pelvis commonly becomes a grave impediment to birth if there is a marked difference between the size of the father's body and head and that of the mother's; for the size of the child's head, which is a decisive factor in the indications for cesarean section, depends, for the most part, on the form of the father's head. Along with chondrodystrophia a child often inherits also a chondrodystrophic narrow pelvis. This deformation is no slight matter, although persons with such a deformity are usually rather intelligent (acrobats, clowns and the like). In harmony with Gütt, Rüdin and Ruttke, commentators on the sterilization law, sterilization should, after all, be carried out. Chorea gravidarum is subject to hereditary influences; also Osler's disease, or telangiectasia hereditaria. Many family trees point to a distinctly hereditary character of this disease. Deformations due to intra-uterine amputation by amnion strands are doubtless nonexistent in spite of the ancient beliefs of many obstetric assistants to that effect. Such deformations are more likely the result of a pathologic hereditary predisposition. In deciding for or against interruption of pregnancy or sterilization the question of heritability is extremely important and each case must be decided on its own merits so long as knowledge of the subject is so incomplete. Wagner warns against drawing too radical conclusions from existent limited knowledge, for in every sterilization one must be conscious of tremendous responsibility toward the patient and toward society.

Experiments on Animals

It will be recalled (THE JOURNAL, Feb. 17, p. 551) that the new legislation for the protection of animals contains special provisions concerning scientific experiments. The federal minister of the interior has now announced detailed instructions concerning special permits, issued to scientific laboratories. The semiannual inspections shall be unannounced and shall be made jointly by physicians and veterinarians. Research experiments may be undertaken only if they hold out the prospect of definite scientific gains or serve to clarify unsolved problems. Experiments for purposes of instruction are permitted only when other methods of instruction (pictures, models, specimens, films) are inadequate. During inspections, attention should be given to the equipment used in conducting animal experiments and to the mode of housing the experimental animals. Inquiries must be made in regard to the number of experiments done since the issuance of the permit and concerning the experimental animals employed, with a differentiation of the higher animals (horses, dogs, cats, monkeys) and the lower animals (guinea-pigs, rats, mice, frogs); concerning the duration of the experiments, and as to whether the experiments were performed on anesthetized or unanesthetized animals; whether general or local anesthesia was used, and whether the animals following experiments (during anesthesia or later) were killed in a painless manner. All observed irregularities must be reported at once to the competent ministry, which reserves the privilege of making unannounced inspections. Institutes granted permits must send in regular reports on the scientific animal experiments performed during the previous two years, covering all the details mentioned.

BELGIUM

(From Our Regular Correspondent)

Aug. 3, 1934.

Meeting of International Bureau of Bibliography of Military Medicine

The fourth session of the Office international de documentation de médecine militaire was held at Liége, June 27-30. Twenty-eight governments sent official delegates: Belgium, Brazil, Bulgaria, Belgian Congo, Czechoslovakia, France, Great Britain, Greece, Haiti, Hungary, Italy, Latvia, Lithuania, Luxemburg, Mexico, Monaco, Netherlands, Paraguay, Peru, Poland, Portugal, Rumania, Switzerland, Turkey, the Union of Socialist Soviet Republics, the United States and Uruguay. The delegates from the United States were Lieut. Walter G. Kilbury, Medical Corps, U. S. Navy, and Dr. Hugh de Valin, medical director, U. S. Public Health Service.

Mr. Albert Devèze in a stirring discourse pointed out the importance of the medical corps in war. He hoped to see developed, for the benefit of the civil populations, zones of safety in which protection may be given to the wounded and to old men, women and children. He is planning to request the Belgian government to convoke an international conference for the purpose of promoting the movement recently launched at Monaco. Lieutenant Colonel Voncken of the Belgian army medical corps emphasized the importance of the plans for humanizing war, launched through the initiative of the prince of Monaco. By creating a commission of jurists and physicians, he has merited the gratitude of the world. Professor de La Pradelle called attention to the heavy duties that rest on those who assume charge of international conferences. He recalled the efforts made in 1874, 1904 and 1907 at The Hague and Geneva and expressed the view that the codification of the rules of warfare is indispensable. In case of violations of accepted rules by a belligerent, he demanded reprisals authorized by the neutral powers.

Among the most important communications may be mentioned, first, "Organization of the Sanitary Service Back of the Lines," by Colonel Schickelé of the French army. About two thirds of the men evacuated from the front are conveyed to the interior of the national territory in order that they may find the best conditions for recovery.

The large number of casualties resulting from modern warfare demands extensive hospital facilities, which must be organized in accordance with an approved industrial plan, with specialization and division of labor. Such installations cannot be made rapidly unless adequate resources are immediately available. Important differences may exist in the various countries. In France the organization is according to military regions, each of which comprises three or four departments of France. Each region is divided into a number of hospital sectors, usually one for each department, each sector having from 4,000 to 5,000 beds. Each sector must have six technical centers, three of which should be medical and three surgical. The centers are all under the direction of qualified specialists. One of the hospital sectors of the region contains, in addition, eight technical centers for the medical and surgical specialists, and a laboratory of bacteriology and chemistry. Then, finally, certain regions have interregional centers for the less common specialties.

All persons evacuated from the front are brought to a technical center, where they are examined by a specialist who may either retain them for treatment in his department or may transfer them to a branch functioning under his supervision. This system is in use in both the permanent and the temporary hospitals. The smooth working of the whole system is effected through the aid of technical and administrative heads, who work in close connection with one another. The persons evacuated from the armies must follow a line of communication on which function the various control and revision outfits of the sanitary trains. The first of these outfits encountered in the territory of a region constitutes a "distributing station." A physician serving as distributor meets all the transport trains from the front, and, being informed as to the hospital accommodations in each sector, distributes the trains in such a manner that the train load may be entirely absorbed by one or more hospitals, in which the persons evacuated may be hospitalized and treated without loss of time.

The risks of aerial bombardment will increase the needs of hospitalization in the interior. It is impossible to estimate the needs at present, but they might be great. The problem of securing an adequate technically trained personnel will arise, which opens the question of the possible utilization of medical aid of nonbelligerents. It is eminently desirable that the laws of future warfare shall protect civil populations against aerial bombardment.

All these problems, first launched at Liége, Brussels and Madrid, received serious consideration at Monaco. Movements for the practical solution of these problems were set on foot, and great honor is due the permanent committee of the Congrès internationaux de médecine et de pharmacie militaires for having played a prominent part in elaborating the plans.

MOTORIZED UNITS IN OPEN WARFARE

General Iliesco of the Rumanian army presented a paper on the use of motorized units in open warfare. Motorization permits not only a reduction of necessary equipment and saving of time but also rapid transportation of the wounded and the gassed to points outside the bombarded area. Mechanical traction, however, cannot be applied to the sanitary equipment of all the units. It is inapplicable to regimental units because of the rough terrain. To the divisions and to the army corps, on the other hand, motorization can render great service by accelerating the distribution and the transportation of the wounded and the gassed to points of safety back of the front lines. Such equipment will make it possible also to station the division and army corps ambulances much farther back, where they will be less exposed to artillery fire.

VACCINATIONS

Col. Clément Zrunek of the Czechoslovakian army presented a paper on "Vaccinations from the Point of View of Legislation." Vaccination for soldiers is only exceptionally prescribed by law. Usually it is based on ministerial orders. Under these conditions, what action should be taken if a soldier refuses to allow himself to be vaccinated? An inquiry on the subject sent to various countries, in connection with smallpox vaccination, makes it possible to divide the armies into three groups: (1) countries with revaccination prescribed by law for all subjects aged 20 to 21 (France, the Union of Socialist Soviet Republics, Uruguay); (2) countries having the same law but with special stipulations for the army (Norway, Brazil, Rumania, Sweden and Turkey), and (3) countries in which vaccination is prescribed only by ministerial decrees and military regulations (most of the other countries). France and the United States were about the only countries that made vaccination obligatory against diseases other than smallpox. Czechoslovakia is about to enact a law making smallpox vaccination obligatory and permitting the minister of national defense to adopt such measures as he shall deem necessary for protection against other infectious diseases.

THE TRAINING OF MILITARY PHYSICIANS

Commandant Jiménez Arrieta of the Spanish army presented a paper on the "Professional Training of Military Physicians." The methods used in Spain have given good results not only from the point of view of recruiting but also as to the quality of the physicians enlisted. Since 1908, special courses in bacteriology, surgery, otorhinolaryngology, ophthalmology, and the like, have been regularly established for the benefit of medical officers. The courses in surgery given at the Military Hospital in Madrid extend over two years and are divided into five periods. The courses in radiology and electrotherapy given in Madrid extend over a period of six months. The medical specialists trained in these courses are used in their several capacities as need arises. The personnel specializing in bacteriology, laboratory analysis and disinfection is handled, however, in a special manner and is held to the study of the following problems: hygiene, alimentation, housing, and choice of clothing and other equipment for the soldier; bacteriologic, histologic and physicochemical analysis; medicolegal relationships; prophylaxis; elaboration and preparation of various vaccines and serums, and veterinary hygiene.

In addition to these courses, in order to enable the medical officers to practice in a military environment, they must attend the special continuation courses that are obligatory for the heads of departments and for the officers of all armed units and all army corps, which comprise three periods: one preparatory, one of practical execution, and a third of advanced training.

In addition to technical papers, the meeting was devoted to the preliminary plans for an international convention, as elaborated in Monaco last February, the purpose of which is to "humanize war"; that is to say, to diminish, in the event of a future war, the evils and rigors not only for the belligerents themselves but also for the civil population, from the use of engines of war with frightful powers of destruction.

The question was first brought up in 1933 at the seventh Congress of Military Medicine, in Madrid. The congress passed several resolutions endorsing the idea. To work for its realization, the prince of Monaco summoned a commission of fourteen members, composed chiefly of the delegates of the permanent committee of the Congress of Military Medicine, and, in addition, of several eminent specialists in international law. The conference resulted in a plan for an international convention to be submitted to the various countries for acceptance at a diplomatic conference to be held later. Five features of the plan are worthy of examination:

ORGANIZATION OF "SANITARY CITIES AND LOCALITIES"

The proposed plan provides for the creation of "sanitary cities" at some distance back of the fighting area, and localities near the battle front, which will enjoy special protection on condition that they are used exclusively for the needs of the army medical corps.

SANITARY AID FURNISHED BY NONBELLIGERENTS

Lest the sanitary units find themselves unable to cope with their stupendous task, the Monaco commission proposed that they be permitted to solicit aid from neutral nations, as regards both personnel and equipment.

TREATMENT OF PRISONERS OF WAR

The proposals in connection with the treatment of prisoners of war supplement the Geneva Convention of July 27, 1929. The sanitary aid to be given prisoners should be furnished as soon as possible by the army medical corps of the nationality of the prisoners or, in its absence, by the army medical corps of a neutral country.

PROTECTION OF THE CIVIL POPULATION

Protection of the civil population would be assured in part by the organization of "cities of safety" in which the civil population might find refuge and protection against the dangers of military operations.

PENALTIES FOR VIOLATING THE CONVENTION

The chief penalties for violation of the convention would be reprisals after confirmation of the facts by a commission consisting of nonbelligerents, the possibility of appeal to the permanent court of international justice, and withdrawal of sanitary aid from the country violating the convention.

The faculty of law of the University of Liége aided in preparing the way for the diplomatic conference proposed. Mr. Ernest Mahaim, professor of international law at the University of Liége, was elected chairman of the special section, and Mr. Fernand Dehousse, assistant professor of international law at the same university, was appointed secretary. The proposed plan is not a thrust against the rights of belligerents. To say that violence cannot be made subject to rules and regulations is, moreover, untenable. It is the essential purpose of all law—international law as well as domestic—to react against violence. There is an increasing trend toward international organization and toward the juridical organization of the world.

At the close of the session of the "juridical section," the permanent committee of the International Congress of Military Medicine and Pharmacy, desirous of retaining and of developing further the collaboration of the physicians and the jurists, which has given such good results, decided to establish the Commission médico-juridique d'études charged with arousing the public opinion necessary for the success of the conference to be held in 1935. This commission, which comprises six physicians and four jurists, belonging to seven nationalities, is under the chairmanship of General Castillo Najéra of the Mexican army medical corps and ambassador from Mexico at Paris and Vienna.

AUSTRALIA

(From Our Regular Correspondent)

Aug. 14, 1934.

The Hospital Lottery Racket in Australia

Economic stress has driven an ever increasing proportion of the population to the public hospitals in Australia. In spite of the efforts at collection of fees from the inmates by the hospital authorities, these institutions have found themselves in financial difficulties. Voluntary subscriptions have almost dried up, and an appeal to the government was the only alternative. The government, in its turn, was also in difficulties and was not prepared to increase the load of taxation.

In Queensland since 1920 the government has conducted a lottery known as the golden casket, which has provided a total sum of over £3,000,000 for medical "charities." It is interesting to note that of the total receipts from the lottery 53 per cent is returned as prizes, 20 per cent is absorbed in expenses, and 27 per cent is available for distribution. A considerable proportion of the money collected came from New South Wales and, in fact, all over the world.

In 1932 the New South Wales government, in face of considerable opposition from the churches, commenced lottery operations on its own account. The opposition has had the effect of curtailing the activities of the director of the lottery. No advertising is permitted and the tickets are limited to five shillings and threepence. The Queensland lottery suffered when New South Wales commenced operations but, taking advantage of the restrictions fettering the latter, Queensland instituted a second lottery with £1 tickets. Five of these were held, and £50,000 in each was subscribed in New South Wales.

This has given considerable anxiety to the minister for health and others, and demands have been made that the restrictions should be removed from the New South Wales lottery so that it may be able to withstand the competition. Statements have been issued in the press strongly defending the lottery on the grounds of expediency and urging that, since it is much less likely to cause ruin to the public than betting and horse racing, these should first be eliminated.

Another aspect of the lottery that is causing concern is the number of lottery shops that have sprung up. These sell one-seventh share in a ticket for a shilling, thus making a profit of 1/9d. on each ticket. It is estimated that at least £100,000 a year is lost to the lottery in this way. An attempt was made to prevent this practice, but on an appeal to the courts it was upheld as being perfectly legal. It is stated to be the intention of the state parliament at its next sitting to declare the sale of share tickets in this way illegal and also to prohibit the gift of shares in lottery tickets as bonuses to those buying goods in shops, at present a common practice.

In Queensland the sale of share tickets of one shilling upward has assumed the proportions of an industry. About every tenth shop in the state is engaged in this business.

As a means of financing capital and maintenance funds of hospitals, the lottery system is a definite success; but there is a strong body of "silent" opinion that is ashamed of the method.

Marriages

GEORGE EDGAR ROY ANTHONY, Detroit, to Miss Helen Elizabeth Rose Burgess of Port Lambton, Ont., September 5.

J. FRANK HIGHSMITH JR., Fayetteville, N. C., to Miss Cornelia Murdock McIntyre of Bennettsville, S. C., July 25.

GERALD WELDON HAYES, East Orange, N. J., to Miss Florence Margaret Auth of South Orange, September 15.

SVEN MARTIN GUNDERSON, Brookline, Mass., to Miss Harriet Elizabeth Adams of Hancock Point, Maine, June 21.

GILBERT B. SALTONSTALL, Charlevoix, Mich., to Miss Charlotte C. Mathauer of Grosse Pointe Park, July 2.

ROBERT C. THOMPSON, Cumberland, Wis., to Miss Alberta Shelby of St. Paul at Duluth, Minn., June 9.

WILLIAM C. HIGHSMITH, Fayetteville, N. C., to Miss Margaret Parker Bridger of Bladenboro, July 25.

WILLIAM MCNEILL CARPENTER to Miss Nena Martin McSwain, both of Greenville, S. C., July 21.

GEORGE ARLIN BAVER, Pennsburg, Pa., to DR. FAITH FRANCES HOPKINS of Boston, September 1.

HOMER MELTON EARGLE, Orangeburg, S. C., to Miss Claribel Croswell Parham of Charleston, July 12.

LAWRENCE FRANCIS DUGAN, Faribault, Minn., to Miss Margaret Lucille Malone of Owatonna, July 13.

FRED HIGGINS BEAUMONT, Council Bluffs, Iowa, to Miss Virginia Kiddoo of Elmwood, Ill., July 21.

ROCCO JOHN ROMANIELLO, Hartford, Conn., to Miss Alice Bernadine Gaffney of New Britain, July 16.

THEODORE DWIGHT STEVENSON to Miss Beatrice Elinor Scott, both of Holyoke, Mass., September 8.

PALMER R. KUNDERT, Madison, Wis., to Miss Kathryn Elizabeth Mauermann of Monroe, June 19.

WILLIAM JACKSON COPELAND, Cary, Ill., to Miss Jennie Alme of Rhinelander, Wis., September 7.

FLETCHER GORDON KING, St. Augustine, Fla., to Miss Evelyn Walters of Lavonia, Ga., recently.

LEWIS J. GREENFIELD, Center, Colo., to Miss Rosemary Kalb of Brooklyn in New York, June 23.

ROBERT C. ANDERSON, Newark, N. J., to Miss Elsie May Parker of Washington, D. C., June 12.

JEROME PIERCE WEBSTER to Miss Geraldine Rockefeller McAlpin, both of New York, July 14.

CHARLES FRANKLIN FISHBACK, Sharon, Wis., to Miss Katherine Williamson of Madison, June 24.

CHARLES SOL STERN, West Allis, Wis., to Miss Ruth Schoenkerman of Milwaukee, June 17.

TAYLOR WOOD GRIFFIN, Quincy, Fla., to Miss Helen Ethridge of Idabel, Okla., June 20.

WILLIAM A. CARRIGAN, Beaufort, S. C., to Miss Beulah Womack at Society Hill, July 28.

JOHN HENRY DOUGHERTY to Miss Florence Mabee Boone, both of Asheville, N. C., July 28.

PORTER CORNELIUS PENNINGTON, Findlay, Ohio, to Miss Cleo Elizabeth Slagle, August 6.

ALBERT JEFFERSON MCILWAIN to Miss Virginia McKinsey, both of Merigold, Miss., June 6.

LOVETT MARTIN REAVES, Dallas, Texas, to Miss Allan Wells in Hope, Ark., July 15.

HENRY LEWIS GREENE to Miss Isabelle Winterbotham, both of Madison, Wis., August 7.

NORRIS H. FRANK, Buffalo, to Miss Donna Gilliland of Conneaut, Ohio, August 12.

LOUIS RICHARD BOWEN, Eustis, Fla., to Miss Myra Sadler of Jacksonville, August 10.

WILLIAM L. HOBART, Lakewood, Ohio, to Miss Eunice Reed of Pomeroy, July 11.

JOSEPH RAY JOHNSON, Cleveland, to Miss Madge Webster of Shaw, Miss., recently.

ARTHUR R. SIMON to Mrs. Mary J. Gardiner, both of La Porte, Ind., July 19.

LAMAN ALEXANDER GRAY, Baltimore, to Miss Alice Virginia Crothers, June 4.

THEODORE M. PAULBECK to Miss Helen A. Schulze, both of Milwaukee, May 12.

CLIFFORD JAMES PITTMAN, Ruleville, Miss., to Mrs. Addie Sue Young, July 29.

Deaths

Edward Francis Kilbane ✠ New York; Cornell University Medical College, New York, 1901; member of the American Urological Association and fellow of the American College of Surgeons; served during the World War; on the staffs of the Misericordia Hospital, City Hospital, Roosevelt Hospital, St. Mary's Hospital for Children, Flushing (N. Y.) Hospital and Dispensary and the Lincoln Hospital; aged 57; was killed, August 18, in an automobile accident in St. Albans, Vt.

James Wilson Du Comb, Carlyle, Ill.; Barnes Medical College, St. Louis, 1905; member of the Illinois State Medical Society; formerly mayor and member of the board of education of Beckemeyer; aged 62; died, July 24, of arthritis, as the result of injuries received in an automobile accident which occurred several years ago.

Samuel S. Coe, High Point, N. C.; University College of Medicine, Richmond, 1911; member of the Medical Society of the State of North Carolina; physician to the High Point College; on the staff of the Guilford General Hospital; aged 53; died, August 6, of complications following an operation for appendicitis.

Charles Richard Marsh, Oneonta, N. Y.; Albany Medical College, 1903; member of the Medical Society of the State of New York; fellow of the American College of Surgeons; aged 54; on the staff of the Aurelia Osborn Fox Memorial Hospital, where he died, July 11, of chronic nephritis and heart disease.

James Fitz Taylor, Sioux City, Iowa; Bellevue Hospital Medical College, New York, 1892; member of the Iowa State Medical Society; fellow of the American College of Surgeons; on the staffs of St. Joseph's, Mercy, St. Vincent's, Lutheran and Methodist hospitals; aged 67; died, July 1, of heart disease.

William Oakley Kemper, Reading, Ohio; University of Cincinnati College of Medicine, 1932; member of the Ohio State Medical Association and the Associated Anesthetists of the United States and Canada; aged 26; died, July 30, in the Christ Hospital, Cincinnati, of septicemia.

Grover Cleveland Blake ✠ Cumberland, Md.; College of Physicians and Surgeons, Baltimore, 1910; fellow of the American College of Surgeons; aged 50; on the staff of the Allegany Hospital of the Sisters of Charity, where he died, recently, of carcinoma of the stomach.

Harvey W. Garrison, Hillview, Ill.; Barnes Medical College, St. Louis, 1906; also a pharmacist; member of the Illinois State Medical Society; formerly member of the school board; aged 53; died, August 6, of carcinoma of the rectum with metastases to the liver and lungs.

Samuel Edward Teague, Hamlet, N. C.; Tulane University of Louisiana School of Medicine, New Orleans, 1921; member of the Medical Society of the State of North Carolina; aged 37; on the staff of the Hamlet Hospital, where he died, August 10, of osteomyelitis.

William LaFayette Gossage, Kennett, Mo.; St. Louis College of Physicians and Surgeons, 1905; member of the Missouri State Medical Association; past president of the Dunklin County Medical Society; aged 67; died, July 9, of pulmonary tuberculosis.

Benjamin Gutmann ✠ New Brunswick, N. J.; Jefferson Medical College of Philadelphia, 1897; fellow of the American College of Physicians; on the staffs of St. Peter's General and Middlesex General hospitals; aged 56; died, August 7, of bronchigenic carcinoma.

Walter J. Foster, Lansing, Mich.; Cleveland College of Physicians and Surgeons, Medical Department of the University of Wooster, 1884; aged 72; died, August 17, in the Edward W. Sparrow Hospital, of injuries received when he fell from the roof of his home.

James Davidson Iglehart, Baltimore; University of Pennsylvania School of Medicine, Philadelphia, 1875; member of the Medical and Chirurgical Faculty of Maryland; aged 84; died, July 14, in the Union Memorial Hospital, of bronchopneumonia.

Victor Joseph Girardi ✠ North Adams, Mass.; Harvard University Medical School, Boston, 1924; member of the school board; on the staff of the North Adams Hospital; aged 34; was drowned, August 1, in the Windsor Pond at Plainfield.

Chester L. Stocks, Bushong, Kan.; University Medical College of Kansas City, 1896; member of the Kansas Medical Society; aged 66; died suddenly, August 3, in the Newman Memorial County Hospital, Emporia, of diabetes mellitus.

John Edward Connor, Rochester, N. Y.; Georgetown University School of Medicine, Washington, D. C., 1904; member of the Medical Society of the State of New York; aged 55; died, August 10, of chronic nephritis and myocarditis.

George Tucker Spencer, Dallas, Texas; Baylor University College of Medicine, Dallas, 1920; member of the State Medical Association of Texas; served during the World War; aged 43; died, August 6, of heart disease.

William David Guttery, Pilger, Neb.; Lincoln (Neb.) Medical College of Cotner University, 1901; at one time superintendent of the Norfolk (Neb.) State Hospital; aged 82; died, July 11, of prostatic obstruction.

John Louis Moorhead ✠ Neodesha, Kan.; Kansas Medical College, Medical Department of Washburn College, Topeka, 1896; for many years member of the board of education; aged 64; died, July 13, of heart disease.

John Albert Kimzey ✠ Detroit; College of Physicians and Surgeons, Baltimore, 1910; veteran of the Spanish-American War; aged 57; died suddenly, July 23, at the Belle Isle bathing beach, of coronary thrombosis.

Moses Wolff Gordon, Jamaica, N. Y.; Rush Medical College, Chicago, 1933; member of the Medical Society of the State of New York; aged 25; died, August 5, of coronary sclerosis and acute myocarditis.

Frederick W. Stewart, Coldwater, Mich.; Cleveland Medical College, 1891; at one time city health officer; formerly on the staff of the Branch County Infirmary and Hospital; aged 73; died, August 14.

Henry Chester Jackson, Woodstock, Vt.; Dartmouth Medical School, Hanover, N. H., 1897; member of the Vermont State Medical Society; aged 70; died, July 13, of prostatitis and myocarditis.

Herbert Arthur Rhoades ✠ Foster, Mo.; Kansas City (Mo.) Medical College, 1897; bank president; aged 65; died, August 3, in the Mercy Hospital, Fort Scott, Kan., of uremia and chronic nephritis.

Eugene Aloysius Sturm ✠ Jasper, Ind.; Kentucky School of Medicine, Louisville, 1904; past president of the Du Bois County Medical Society; served during the World War; aged 55; died, August 10.

Henry A. Broad, Chicago; Illinois Medical College, Chicago, 1909; on the staff of the Lutheran Memorial Hospital; aged 63; died, September 6, of hypostatic pneumonia and coronary thrombosis.

George Arthur M. Eychaner ✠ Nahma, Mich.; University of Nebraska College of Medicine, Omaha, 1926; aged 33; died suddenly, July 23, in the Pinecrest Sanatorium, Powers, of diabetes mellitus.

William Jeremiah Taylor, Everett, Mass.; Tufts College Medical School, Boston, 1932; intern at the Brooklyn (N. Y.) Eye and Ear Hospital; aged 31; died, July 12, in the Malden (Mass.) Hospital.

Charles Harris Latimer, Laurel, Md.; College of Physicians and Surgeons, Baltimore, 1881; on the staff of the Laurel Sanitarium; aged 73; died, July 29, of heart disease and arteriosclerosis.

Charles Henry Jahn, North Milwaukee, Wis.; Rush Medical College, Chicago, 1895; formerly on the staff of St. Joseph's Hospital, Milwaukee; aged 65; died suddenly, July 25, of heart disease.

John Williamson Price, Denver; Memphis (Tenn.) Hospital Medical College, 1903; aged 53; died, August 6, in Colorado Springs, of chronic nephritis, pneumonia and chronic myocarditis.

Ralph Henry Goldberg, New York; University of Vermont College of Medicine, Burlington, 1895; aged 62; died, August 8, in the Veterans' Administration Facility, of chronic myocarditis.

Gustav Koehler ✠ Chicago; Julius-Maximilians-Universität Medizinische Facultät, Würzburg, Bavaria, 1895; aged 68; died, August 5, in the Grant Hospital, of carcinoma and embolism.

Otto John Gutsch, Sheboygan, Wis.; College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1886; aged 69; died, August 11, of cirrhosis of the liver.

George Myers Godfrey, San Antonio, Texas; National University Medical Department, Washington, D. C., 1896; aged 64; died, June 26, of pulmonary tuberculosis and nephritis.

Allen T. Hays, Vernon, Texas (registered by Texas State Board of Medical Examiners, under the Act of 1907); aged 86; died, in August, of a skull fracture sustained in a fall.

George L. Madison, West Chicago, Ill.; Bennett College of Eclectic Medicine and Surgery, Chicago, 1877; aged 85; died, June 7, of acute hepatitis, jaundice and acute cholecystitis.

James Henry Thompson, Pittsburgh; Hahnemann Medical College and Hospital, Chicago, 1886; aged 75; died, July 12, in the Homeopathic Medical and Surgical Hospital.

Charles E. Frost, Cottage Grove, Ore. (licensed in Oregon in 1912); served during the World War; health officer; aged 57; died suddenly, July 30, of coronary thrombosis.

Eugene K. Whidden, Pensacola, Fla.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1910; aged 45; died, July 30, in the Pensacola Hospital, of pellagra.

Leo F. Towers, Toledo, Ohio; Physio-Medical College of Indiana, Indianapolis, 1880; aged 74; died, August 13, of carcinoma of the colon and coronary thrombosis.

John Melvin Thompson, Graham, N. C.; University of North Carolina School of Medicine, Chapel Hill, 1909; aged 46; died, July 14, of pulmonary tuberculosis.

John Calhoun Griffies, Carrollton, Ga.; Atlanta Medical College, 1890; member of the Medical Association of Georgia; aged 74; died, July 26, of acute nephritis.

George Brinton McClellan, Weir, Kan.; Northwestern Medical College, St. Joseph, 1894; aged 69; died, July 22, in the Mount Carmel Hospital, Pittsburg.

James Thomas Suggs, Cleveland; Howard University College of Medicine, Washington, D. C., 1903; aged 56; died, August 20, in the Lakeside Hospital.

Max Henry Bracker, New York; Columbia University College of Physicians and Surgeons, New York, 1902; aged 56; died, August 8, of heart disease.

Hamlin Collier Cook, Cedartown, Ga.; Georgia College of Eclectic Medicine and Surgery, Atlanta, 1888; aged 75; died, July 3, of chronic myocarditis.

Frederich Gustave Eidman Sr. ✠ Houston, Texas; University of Texas School of Medicine, Galveston, 1896; aged 59; died, August 4, of chronic nephritis.

John Maxwell Heading, Johnstown, Pa.; College of Physicians and Surgeons, Baltimore, 1886; aged 78; died, August 15, of chronic myocarditis.

James Enos Butler, Dallas, Texas; Kentucky School of Medicine, Louisville, 1895; aged 77; died, August 8, of coronary disease and arteriosclerosis.

Walter Brainard Allen, Red Bank, N. J.; University of Vermont College of Medicine, Burlington, 1900; aged 61; died, August 11, of heart disease.

James Peyton Curlee, Woodbury, Tenn.; Vanderbilt University School of Medicine, Nashville, 1879; aged 76; died, August 15, of chronic nephritis.

William R. Mizell, Shelbyville, Ill.; Miami Medical College, Cincinnati, 1874; Civil War veteran; aged 94; died, August 1, of senility.

Ernst Zille, Egg Harbor City, N. J.; Baltimore University School of Medicine, 1897; aged 83; died, July 25, of chronic myocarditis.

John Cearnes Jolly, Rockport, Ind.; Kentucky School of Medicine, Louisville, 1885; county auditor; aged 76; died, July 23, of heart disease.

Alfred Gates, Lebanon, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1890; aged 64; died, August 10, of heart disease.

Alfred T. Wright, Waynesville, Ohio; Jefferson Medical College of Philadelphia, 1876; aged 81; died, August 15, of myocarditis.

George Michael FitzGerald, Brooklyn; Long Island College Hospital, Brooklyn, 1892; aged 64; died, July 29, of leukemia.

Hyram G. Brooks, Elkhorn, Tenn.; University of Tennessee Medical Department, Nashville, 1890; aged 75; died, July 20.

Charles Edward Cutler, Magnolia, Iowa; Pulte Medical College, Cincinnati, 1878; aged 83; died, August 8, of hemiplegia.

Joseph Henry Gerass ✠ Westfield, N. Y.; University of Buffalo School of Medicine, 1927; aged 35; died, July 8.

Charles Alexander Shaeffer, Lees Creek, Ohio; Baltimore Medical College, 1893; aged 67; died, August 17, of carcinoma.

Bernard Anthony Maffucci, Dunmore, Pa.; Temple University School of Medicine, 1923; aged 35; died, July 22.

Gus A. Hardwick, Utica, Ky.; Louisville Medical College, 1874; aged 83; died, July 21, of senility.

Correspondence

ANTIQUITY OF QUINTUPLETS

To the Editor:—The following excerpt from Rolfe's "Attic Nights of Aulus Gellius" (volume II, p. 217), a judge in the courts during Galen's residence in Rome, appears apropos:

> The philosopher Aristotle has recorded (Cf. Hist. Anim. vii, p. 584, 29) that a woman in Egypt bore five children at one birth; this, he said, was the limit of human multiple parturition; more children than that had never been known to be born at one time, and even that number was very rare. But in the reign of the deified Augustus the historians of the time say that a maid servant of Caesar Augustus in the region of Laurentum brought forth five children and that they lived for a few days; that their mother died not long after she had been delivered, whereupon a monument was erected to her by order of Augustus on the via Laurentina, and on it was inscribed the number of her children, as I have given it.

JOSEPH WALSH, M.D., Philadelphia.

FEES FOR C W A SERVICE

To the Editor:—Dr. Leslie W. Beebe's communication regarding chiseling insurance companies (THE JOURNAL, September 15) interests me because of a similar recent experience with the U. S. government.

February 1, a man who operates an elevator in the building of the Workmen's Compensation Department at 80 Eighth Avenue, New York, was referred to our office for a roentgen examination of the left little finger because of an injury that produced a fracture. The report was made to the referring physician and a duplicate sent to the medical supervisor, and documents were filled out in triplicate, not only once but several times. This was the first of eight cases referred to us by the C W A, and after getting nothing out of any of them except more and more documents to fill out in triplicate, some of them with the physician's name inserted by the C W A office in the space where the claimant's name belonged, I wrote to the C W A office and said "Both Dr. Lewis and I will be most grateful if you will see that our names are taken off of the list of x-ray men for C W A work because the red tape involved in getting paid for these cases is more trouble than the small receipts are worth."

Except for an occasional request for more documents to be executed in triplicate, we heard nothing from the C W A on any of these cases until September 14, when the bill for $5 for roentgenographing the man's finger was rewarded with a check from the Office of the Chief of Accounts, U. S. Employees' Compensation Commission, in the amount of $3.15, together with the following mimeographed slip:

> The Commission is allowing your voucher rendered in this case at a lower rate than charged by you. It is realized the fees allowed in this case may be lower than the usual fees charged to the average private patient. However, it must be borne in mind that the setting up of the Civil Works Administration program with the allowance of compensation benefits will to some extent relieve the medical profession of the burden of free treatment. In view of the Federal employment of these people as a relief measure, it is not believed the average fees generally charged in each locality are warranted. You will probably find the fees allowed in this case are not less than the fees you charge a private patient in the same income class as the injured employee or the minimum fee schedule of your county Medical Society. They can be compared favorably with fees allowed for medical treatment of the unemployed under authority of the Federal Emergency Relief Administration.

The casualty insurance companies operating in New York City are not noted for their benevolence toward the medical profession, but they always pay $5 for a roentgen examination of a finger, even when it is only the little finger. I was once favored with the x-ray work of the New York Edison Company until an advertising commercial laboratory took it over, and it never paid less than $5 for a roentgen examination of any part of the body. For the U. S. government to imply that $3.15 is as much as I ought to expect to get for roentgenographing a finger impresses me therefore as nothing but the vaporings of some bureaucratic mind.

I have accepted the $3.15 on account, and endorsed the check to that effect, though I do not expect to live long enough to get the other $1.85. (There are seven other cases yet to be heard from.) $3.15 is 63 per cent of $5. When the next income tax payment is due, I intend to submit 63 per cent of the amount assessed by the government and tell them that as they have reduced my claim in this proportion it is surely only fair play for me to reduce their claim in the same degree. I shall report later on how I make out on the test case.

RAMSAY SPILLMAN, M.D., New York.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

ELECTROCARDIOGRAPHY

To the Editor:—For no special reason except that I had about two months' experience with an electrocardiograph four years ago, I have been appointed to a committee to study the advisability of the purchase of such a machine by our local hospital. Ours is a city of some 25,000 with a rather high general average population. Twenty miles away there are three or more able heart specialists with electrocardiographs. Our hospital has about 125 beds. It is the feeling of some of the men that at least a thousand dollars a year is going to heart specialists in another city that might well stay here. Furthermore, there are numerous cases in the wards in which we would benefit, we think, by having a machine. Of course, we realize that even though we had a machine a considerable number of residents would continue to go elsewhere for electrocardiography as they do for other medical services. We realize also that, far from making a profit for the hospital, our first care would be to cover the interest charges. I would appreciate your listing the conditions in which you feel that an electrocardiograph is relatively essential for diagnosis or prognosis. Do you feel that the city and the hospital are large enough so that we could reasonably expect to cover expenses? I would appreciate your naming a book or monograph that presents the subject in a satisfactory manner. If we purchase a machine I may be the one who runs it and tries to interpret the results. As I have stated, I have had just enough experience, to make me realize how little I know about the subject. Please omit name and town. M.D., Massachusetts.

ANSWER.—An electrocardiograph is by no means a necessity and gives relatively little of clinical importance that cannot be gained by the hand and ear aided by clinical experience. Perhaps its greatest value is in confirming the clinical experience. It gives a graphic record which confirms the clinical diagnosis and serves as a check on what one does and does not know. Its teaching value in differentiating arrhythmias would be a sufficient reason for its installation. There are some conditions in which it is essential for diagnosis, as in bundle branch block, and is of great assistance, as in coronary disease and coronary accidents. It is frequently difficult or impossible to make a positive diagnosis of a number of the more frequent arrhythmias without its use. Premature auricular and premature ventricular contractions can often be differentiated clinically but not always with accuracy.

An institution of the type described should have an electrocardiograph. A portable string galvanometer is the best when only one machine is to be installed. Its operation is not difficult and can be mastered in a short time. The new instruments are easy to manipulate and almost impossible to damage. The interpretation of the electrocardiograms offers more difficulty but can readily be mastered with time and experience. If one confines oneself to the data of known clinical value, the interpretation is not a difficult task.

The cost of operation is small and the apparatus should not only pay maintenance and interest charges but pay for itself in a short time. It is much better for financial reasons, as well as from the standpoint of service to the physician and the patient, to make the cost to the patient small and depend on a large volume of work.

The operator should familiarize himself with and have available for constant use "The Mechanism and Graphic Registration of a Heartbeat" by Thomas Lewis. In addition there are many other excellent works that he may use.

AMENORRHEA AND MENSTRUAL IRREGULARITIES

To the Editor:—A patient, white, aged 19, started to menstruate at the age of 13. The menstruation has been of an irregular type. An apparently normal flow of moderate amount, lasting for from four to five days, is usually followed by a period of three to four months in which no menses occur. There is nothing abnormal in the past generation so far as is known; the mother and sisters menstruate normally. The patient measures 5 ft. 6 in. (167.6 cm.) in height, and weighs 118 pounds (53.5 Kg.). She has no physical defects; examinations of the neuromuscular, respiratory and circulatory systems are negative. The blood examination shows red blood cells 4,800,000, white blood cells 6,200, hemoglobin 85 per cent, and the differential count is normal. Urinalysis is negative. The gastro-intestinal and genito-urinary systems are normal. There have been no operations. Bimanual pelvic examination reveals no pathologic masses or discharges. Treatment during the past eighteen months has consisted of a drug to stimulate the formation of hemoglobin; two hormotone tablets taken three times a day; following the use of 300 hormotone tablets, 100 progynon tablets were given. The treatment has produced no results and the patient has not menstruated since February 2 to February 7. Are endocrine dysfunctions usually the cause of functional amenorrhea? What suggestions have you for the management of this type of case.

M.D., Wisconsin.

ANSWER.—In the process of menstruation at least three organs are involved: the pituitary gland, the ovaries and the uterus. Rhythmic bleeding from the uterus is nearly always dependent on the proper functioning of the ovaries, and the latter in turn are controlled by the anterior lobe of the pituitary. The pituitary gland is therefore the regulator or, as Zondek called it, the motor of the ovaries. It is not known why some women have a twenty-eight day menstrual cycle, others a thirty day cycle, and still others further variations in the menstrual cycle. To produce uterine bleeding in women with amenorrhea is generally easier than to change the interval at which menstrual periods occur. Furthermore, it must be understood that not all bleeding that follows medication is actual menstruation. Likewise, in most cases in which bleeding is produced by medical measures the flow of blood is only temporary and does not recur unless more medication is employed. Estrogenic preparations, such as theelin, progynon and others, do not stimulate the ovaries. On the other hand, estrogenic substance administered to women with functioning ovaries may do harm. In the case cited there is no need to employ expensive and unproved remedies in an attempt to bring about more frequent menses. This patient does not have amenorrhea (complete suppression of the monthly flow). She may be honestly told that she is as healthy as women who menstruate every month and therefore nothing need be done to make her menstruate more often.

TELANGIECTASIA AFTER ACTINIC EXPOSURE

To the Editor:—A woman, aged 25, whose history is negative, after quite a prolonged exposure to the sun four years ago noticed a red, mottled discoloration of the outer surface of both forearms. It looks exactly like a nevus, or birthmark, and on close examination the distended capillaries may be seen. It remains the same winter and summer and seems to be spreading. At present when it is exposed to the sun it burns intensely. It looks something like the telangiectasia seen after the use of x-rays by Tricho operators, but she has had nothing of that sort done. I should like to know what this is and if there is any way of getting rid of it. It is quite disfiguring.

KATHRYN M. WHITTEN, M.D., Fort Wayne, Ind.

ANSWER.—It is possible that the exposure to the sun was the determining factor in causing the patches of telangiectasia; but there must have been a predisposition present, some weakness of the small blood vessels of the skin, or their nervous apparatus, which made them more than normally susceptible to actinic irritation. Telangiectasia occurs on the face secondary to habitual exposure to the sun, but only in certain skins, in which the pigmentary protective apparatus is defective. Areas of telangiectasia on the forearms indicate great susceptibility in the skin of that region.

The patient, therefore, should be studied for possible causes of vascular disturbance. Syphilis, liver, cardiac or kidney disease, hyperthyroidism, pituitarism or other endocrine abnormality, Raynaud's disease, arteriosclerosis or leukemia should be considered. If with the dilated vessels there are spots of atrophy and pigmentation causing a close resemblance to roentgen telangiectasia, a rare skin disease known as poikiloderma atrophicans vasculare is a possible diagnosis. Some of the cases have been associated with internal malignant growths; others show no such relationship (Lane, J. E.: Poikiloderma Atrophicans Vasculare, *Arch. Dermat. & Syph.* **4**:563 [Nov.] 1921).

If the telangiectatic patches cannot be improved by treatment of some etiologic factor, roentgen treatment, one-fourth erythema dose (75 roentgens) of lightly filtered (1 mm. of aluminum) roentgen rays once a week for four doses may be tried. If this fails, a mercury vapor quartz lamp may be pressed on a small area long enough to produce a sharp erythema. This may result in reduction of the dilated vessels.

Carbon dioxide snow is another possibility. A small stick should be applied with firm pressure for one or several seconds to many areas, causing a mild reaction not severe enough to cause checkering.

Electrolysis may be used if the vessels can be entered by the needle carrying the negative current. From 1 to 1.5 milliamperes should be allowed to pass for a half minute or more until the vessel turns white; then one should remove the needle without breaking the circuit in order to prevent hemorrhage.

Sodium morrhuate, 3 per cent in oil, may be injected into the vessels with a fine needle. At points at least 2 cm. apart on the border of the patch 0.1 cc. is used. The reaction from one treatment should be allowed to subside before another attempt is made in the same area.

PAINFUL STUMP AFTER AMPUTATION

To the Editor:—A man, aged 30, had a crushing injury of both feet, Aug. 15, 1932. August 17 the right foot was amputated at the junction of the middle and upper thirds of the leg. It was four months before complete healing took place in the incision. At the end of six months he started to wear an artificial leg with the weight bearing just below the knee. About three weeks after he began to use this leg, an ulcer formed in the incision. The incision had a serous drainage, and he complained of burning at night when the artificial leg was off. Because the ulcer steadily increased in size, he insisted on a reamputation, Aug. 15, 1933. At the time of operation a neuroma was found. Reamputation was done, 2 inches of the stump being removed. The wound healed in ten days. In November he started wearing a new artificial leg, and in December two ulcers formed on the incision. These have a serous drainage but do not cause pain. He does complain, however, of severe pain at the end of the tibia, which is covered by a good pad. Roentgen examination of the bone and blood examinations are negative. General examination is negative, except for a highly nervous state. His past medical history is negative. The patient's family has been described by another doctor as highly neurotic. Boric powder in the bearing, ultraviolet rays and scarlet red ointment have produced no change. Please omit name.

M.D., Pennsylvania.

ANSWER.—The problem is a double one. In the first place, an orthopedic surgeon has advised that when the amputation is below the knee it is important that the anterior edge of the tibia at the site of amputation be properly leveled off, that the fibula be amputated about 2½ inches above the level of amputation of the tibia and that the flap be so planned that it is neither too rigid nor too tight. Recurring ulceration may be caused by the failure to observe any one of these instructions. If the pain persists after the employment of proper orthopedic measures, the nerve should be resected for 2 or 3 inches above the point of amputation. At the time the orthopedic measures are being carried out, the nerves, such as the perineal and posterior tibial, could be exposed, dissected free, ligated with fine ligature catgut and amputated so that they will draw back in the muscle planes 2 or 3 inches above the line of amputation. Occasionally, alcohol may be injected into the severed ends of the nerves, as this usually reduces the size of the subsequent neuroma.

PREGNANCY AND HYPERTENSION

To the Editor:—A married woman, aged 42, had the usual diseases of childhood and scarlet fever while in college. Cholecystitis with stones developed and a cholecystectomy was performed in 1927. Since then she has had five or six attacks of what was apparently gallstone colic requiring morphine for relief. She has had three pregnancies, two since the cholecystectomy. These pregnancies were normal except that two of the deliveries were by forceps for occiput posterior presentations which would not rotate. Recovery was normal in each case. She had two spontaneous six to eight week abortions; none have occurred since the last pregnancy. The patient is now between five and six months pregnant and has a persistent systolic blood pressure of 160 to 176 mm. of mercury and a diastolic pressure of 86 to 94. The urinalysis is negative. The average specific gravity is 1.018. There is no edema. There are no subjective complaints. The blood pressure has been elevated since the third month of pregnancy. About four months before she became pregnant the blood pressure was 122/80 and the pulse rate about 80. Economic conditions force this woman to do more physical work than I think advisable. A moderate amount of rest (an hour after meals) and a milk, fruit and vegetable diet seem to have no effect on the blood pressure. Would you care to give me advice on the facts as stated? Please omit name and address.

M.D., Iowa.

ANSWER.—The patient's present condition need not give concern. Since there appear to be no objective and subjective disturbances other than an elevation in blood pressure, the outlook for continuation of the pregnancy without serious occurrences is not bad. The diet prescribed is satisfactory but there would be no harm in adding more proteins in the form of meat and eggs. It is advisable to eliminate all salt from the food. Mild sedatives, such as the bromides, should be pre-

scribed for a few days at a time. The patient should be watched carefully. Once a week the blood pressure should be taken, the urine examined and the weight recorded. Should untoward signs and symptoms appear such as albuminuria, edema, excessive gain in weight, severe headaches, stubborn constipation and vomiting, the patient should be put to bed and given such sedatives as phenobarbital, sodium and magnesium sulphate. The diet at such a time should be high in carbohydrates and it may be advisable to give dextrose intravenously. If improvement does not follow rapidly, the pregnancy should be terminated, preferably by rupturing the bag of waters.

LUNULA OF FINGER NAILS

To the Editor:—Will you please explain the nature of the "half-moon" on the finger nail? I have a patient (coronary disease) who states that he lost all of them about a year ago. His nails and finger tips seem normal otherwise. WILLIS P. BAKER, M.D., Santa Ana, Calif.

ANSWER.—The lunula ("half-moon") is a more or less convex or half-moon shaped area that appears as a little white crescent in front of the nail fold, at the base of the uncovered portion of the nail. It does not really end at the edge of the covering of the nail fold but extends on each side of the lateral edges of the nail. Frequently, especially on the toes, it is necessary to push back the roof of the nail fold before the lunula becomes visible. The lunula is the macroscopic expression of the matrix of the nail (Unna). The difference in color of the lunula and the nail bed is an absolute one, owing to the fact that the latter contains more blood than the former. The difference is undoubtedly due to the fact that the nail bed is covered by a transparent horny substance, whereas there are a number of absolutely opaque elements in the matrix of the nail which completely scatter the light. These are the transitional cells, which are covered over and over with points that appear whiter than the granular cells by reflected light. Their presence marks the exact boundary of the lunula. Ranvier ascribes the white color of the lunula to the "irregularity of the keratogenous cells."

Changes in the lunula may be noted in all pathologic changes affecting pigmentation of the nails, in disease processes that influence the consistence of the nail plate and its structure, and in pathologic conditions of the nail bed in which the morbid processes take place in the region of the lunula. The nail changes in heart disease are brought forth through stasis or congestion of the venous system (J. Heller, Die Krankheiten der Nagel, Berlin, 1927). Heller states that the more common changes in the nails in heart disease are bluish discoloration (cyanosis) and hippocratic curvature. He describes a case in a woman of 50 with a patent foramen ovale and ductus botalli as well as a stenosis of the pulmonary ostium in which the finger nails were of a deep blue-black and showed the hippocratic curvature and the lunulae were not visible. Heller states that he has examined many heart cases without establishing the presence of any special changes in the nails.

SENSITIVITY TO GRASSES AND RAGWEED

To the Editor:—I have a patient, a girl, aged 12 years, who reacts strongly to mixed grass and ragweed; there is no other positive reaction, such as food. She had an attack of hay fever and asthma last year, August 1. She had hay fever this year beginning in June and asthma this year August 21. The important thing is, shall I give the pollen extract for both conditions as a perennial method for one and a preseasonal method for the other? Kindly advise me. Please omit name.

M.D., New York.

ANSWER.—As this girl has both grass and ragweed hay fever there are two possible ways of treating her: she may either be given the ragweed injections now in small doses, preferably intradermally, every day or every other day, followed by increasing amounts of ragweed and continued all the year round about once in two weeks, or the ragweed may be given coseasonally now and then stopped and started again next year.

As the grass season is over, there is no need of giving grass extract at this time. However, should the perennial treatment for ragweed be decided on it would be wise to give the grass injections at the same time so that when the grass hay fever season starts next May or June the patient will have reached a sufficiently high dosage of grass extract to give more or less protection.

Either method will probably give good results. It is to be understood, of course, that the grass and the ragweed extracts should never be mixed because of the difference in the time of the year in which these weeds pollinate. It is best to give the ragweed extract in one arm and the grass extract in the other arm. The two may be given at the same time.

EXFOLIATIVE DERMATITIS IN INDUSTRY

To the Editor:—The following is a report to an oil company concerning one of the men whom I examined who has dermatitis exfoliativa. His condition has continued to improve since the time of the last writing. Have the ingredients of coal tar and pine tar been known to cause a condition like this one before when one mixes them up and melts them with asbestos for insulating purposes as in this case? About April 3, the patient helped prepare some insulating material, which consisted of commercial pine tar, coal tar and asbestos. The pine tar and coal tar were melted and then prepared in a box with the asbestos and stirred. The fumes from this irritated his nose and throat and made them burn. On Thursday, April 5, he first noticed little pimples on his fingers and both hands, and they extended up the arm and over the body. On April 6 he first saw a doctor because of the rash on his hands and arms; the rash continued to spread over the body, involving the legs and face last. The skin became greatly swollen and erythematous, and he developed a typical exfoliative dermatitis, great sheets of epidermis peeled off, and large quantities of serum oozed out. At no time was there any involvement of the kidneys or bowels. The mucous membrane of the nose and throat was never seriously involved. At present he is very much better, the swelling and edema having largely, if not completely, left. The skin is very rough, dry and scaly. Large flakes of skin, even larger than the palm of the hand, were peeling off at one time. The patient says he feels well. Since the kidneys and bowels are in good shape there seems to be no toxic involvement of the internal organs.

LELAND BAXTER, M.D., Newark, Ohio.

ANSWER.—It is not possible unequivocally to state that local irritants such as coal and pine tars may be the direct source of dermatitis exfoliativa. Recently there was observed a fatal case of dermatitis exfoliativa in a filling station operator who was brought in contact with ordinary petroleum derivatives. In this instance there was a history of syphilis and recent previous administrations of arsenicals. Also, recently a case of dermatitis exfoliativa developed in a worker engaged at the time of the onset of his illness in fruit tree spraying. It is perhaps permissible to take the stand that dermatitis exfoliativa may follow in the wake of ordinary chemical dermatoses. Long ago Stelwagon, after mentioning that dermatitis exfoliativa might develop from a preexisting eczema, stated that "local irritation from a drug, especially chrysarobin, arnica, mercury and iodoform, has been known to provoke an outbreak in some instances." Benzene is known to have produced this condition. As the essential underlying factor in obscure cases is so often undeterminable, it seems necessary in many such instances to associate for legal and compensation purposes this condition with recent antecedent chemical dermatoses.

NECROSPERMIA AND AZOOSPERMIA AS CAUSES OF STERILITY

To the Editor:—A married man, aged 35, has consulted me regarding the fact that his wife, an apparently healthy normal woman, who gave birth to a son eight years ago, has not been pregnant since that time. No method of prevention of conception is used. They engage in marital relations about once every two weeks. I have had a microscopic examination of his semen within ten minutes after ejaculation. Many spermatozoa are visible, but they are apparently immotile. There is no history of genito-urinary disease. Are we probably correct in assuming that the sterility is caused by the immotility of the spermatozoa? If so, can you kindly advise what can be done about it? Please omit name.

M.D., Ontario.

ANSWER.—There is no doubt that the immotility of the spermatozoa is the cause of the sterility. It is however important to rule out a possible artificial immotility of the spermatozoa in the condom specimen. If the condom has been brought to the physician in a jar of warm water, as so often is advised to prevent chilling of the specimen, it may happen that the water is too hot, thus instantly killing the spermatozoa. Sometimes the powder that the manufacturer puts in the condom to facilitate its use contains a chemical that is inimical to the vitality of the spermatozoa.

Assuming that in this case the spermatozoa are immotile when they are ejaculated, it is necessary to determine the cause of the necrospermia. This is not always easy. The absence of a history of venereal disease does not absolve the genito-urinary system as a cause of the condition. A nonspecific seminal vesiculitis or prostatitis may kill spermatozoa as effectually as gonococci. The fluid obtained by combined prostato-vesicular massage must be carefully examined for pus cells. The presence of pus cells indicates the existence of a pathologic condition, which must be found and treated.

In the absence of a pathologic condition of the genito-urinary system, it is important to find out whether at any time the patient has had roentgen treatment applied to the perineum, thighs, lower abdomen, or the genital organs themselves. This is a common cause for necrospermia and azoospermia. Modern methods must be used to determine whether there is a dis-

turbance of endocrine function. A metabolism test must be made by an expert to help solve the problem. The anemia found so often in blood donors can easily be diagnosed.

One may often relieve the condition in cases in which painstaking examination fails to reveal the cause by advising an outdoor life with plenty of sunshine and the internal administration of tablets of anterior pituitary substance. Large doses, as much as 5 Gm. (80 grains) a day for several months, are given. Of late successful results have been reported with the hypodermic administration of anterior pituitary-like principle from pregnancy urine three times a week for several weeks. As there is possibility of producing excessive hypertrophy of the prostate with the latter treatment, as reported in monkeys by Geschickter, Lewis and Hartman, this should be employed with care.

APPLE DIET FOR COLITIS AND INFANT DIARRHEA

To the Editor:—Recently I have been hearing of the feeding of scraped ripe apples for colitis and infantile diarrhea. Would you please publish your opinion of the value of this food or treatment in reference to its corrective use in children's diseases.

R. C. HUNTER, M.D., Wapakoneta, Ohio.

ANSWER.—The apple treatment consists of a diet of only raw scraped apple. Completely ripe and mellow fruit should be used. From one to four tablespoonfuls is fed every hour or two for forty-eight hours. The amount given varies with the age of the patient. Nothing but water should be given besides the puréed apple. After the forty-eight hours, three meals are resumed as follows: In the morning, farina (cooked for one hour in water), toast and cocoa (made with water). At noon, soup with rice, scraped beef and toast. At night, cottage cheese, toast, ripe banana purée and cocoa made with water. After forty-eight hours boiled milk is added, then vegetable purée and finally fruit in small amounts. The diet should not be used for infants.

Formed stools usually appear within forty-eight hours after the treatment is instituted. (The method is described by Birnberg, T. L.: Raw Apple Diet in the Treatment of Diarrheal Conditions in Children, *Am. J. Dis. Child.* **45**:18 [Jan.] 1933).

SPREAD OF SCARLET FEVER

To the Editor:—Reference is made to the spread of scarlet fever and that part of your reply (THE JOURNAL, July 21, p. 208) "It has been shown that the air in a room occupied by a scarlet fever patient may be contaminated" and "articles in the room may likewise be contaminated." Will you please cite me a single instance by a reliable authority in which the air of a room has acted as a mode of conveyance in any of the communicable diseases? Apart from the handkerchief secretions and drinking glass, how could contamination take place by articles in the room?

HENRY FARRELL, M.D., McCook, Neb.

ANSWER.—Scarlet fever belongs to the group of air borne diseases. Contamination of air in the immediate vicinity of the patient may be demonstrated by exposure of blood agar plates. Weaver and Murchie (THE JOURNAL, Dec. 21, 1919, p. 1921) and Matousek (THE JOURNAL, May 28, 1921, p. 1490) reported contamination of door knobs and similar objects as well as contamination of the hands and masks of attendants.

SYPHILIS OF NERVOUS SYSTEM

To the Editor:—I have a patient who contracted syphilis about twenty years ago. He had his blood examined several times and then was told that it was safe for him to get married, which he did. About two years later his wife gave birth to a perfectly normal baby girl; two years following, a baby boy was born normal in every way. About ten years ago he came to me suffering with symptoms of appendicitis. I tested him out thoroughly and found a 4 plus Wassermann reaction and put him on syphilitic treatment for at least six months and he improved gradually. He then moved to another town and took treatment for some time from another physician. Later he developed a type of grandeur, imagined he had all kinds of money, and commenced to write checks accordingly but was soon stopped. He was sent to a sanatorium and there they tried to give him malarial treatment and the first dose almost proved fatal. Then they put him on tryparsamide weekly. Now he seems to be perfectly normal except for complaints continually of a creeping sensation across his forehead from temple to temple and at night he has to tie his head up in order to sleep. I would appreciate any suggestions you may offer.

M.D.

ANSWER.—In the first place, it is suggested that the patient should keep under treatment with tryparsamide, unless there is some definite contraindication, until the cerebrospinal fluid tests are all negative.

It is not possible to offer a diagnosis as to the cause of the creeping sensations in the forehead on the meager data furnished. Without a diagnosis it is not possible to suggest treatment.

TOXICITY OF VAPORS FROM ASPHALT

To the Editor:—What are the harmful effects due to inhalation of gases or vapors from hot or boiling asphalt and what are the gases liberated? Please omit name.

M.D., Illinois.

ANSWER.—Asphalt is not a specific chemical. The term may be applied to natural, petroleum or coal tars of certain qualities. Chemically, all varieties are similar but not identical. This answer is directed chiefly to natural Trinidad asphalt. This fossil bituminous substance results from petroleum through the evaporation of the lighter hydrocarbons followed by the slow oxidation of the residue through the ages. When this substance is heated to high temperatures under natural pressure, the vapor yield is highly complex but contains hydrogen sulphide, benzine, naphtha, light oils, paraffin oils and various organic acids, including phenol or phenol-like substances. An article entitled "Road Tar Poisoning," by Dr. Carey P. McCord (THE JOURNAL, March 2, 1929, p. 695) furnishes a long list of chemicals that may be derived from asphalt as used on roads, which, however, may be coal tar rather than natural asphalt. In any event the list of derivatives is similar. These asphaltic vapors are toxic, but cases resulting from exposure to them are to be accepted as from mixed poisons rather than from one precise agent.

INDUSTRIAL HAZARDS IN HAT CLEANING

To the Editor:—Kindly tell me what poison may be absorbed through the skin, or inhaled, in the industry of hat cleaning. I have a patient with retrobulbar neuritis and am trying to trace the cause.

RODOLPH M. CUTINO, M.D., Brooklyn.

ANSWER.—In the cleaning of felt hats, the chief hazards are those attending the use of solvents. The chief solvents so employed are naphtha, Stoddard's solvent and carbon tetrachloride. A wide variety of other substances are in infrequent use. All the solvents specified by name may irritate the skin locally, may enter the body through the skin, or may be taken into the body through inhalation. In the manufacture of felt hats, mercury is still in some use as the carroting agent. The hazard of mercury poisoning is definite in some hat manufacturing establishments. Quite remotely, it is possible that in hat cleaning work sufficient mercury might be removed from the felt fibers to produce mercury poisoning. Even more remote is a possibility that arsenic poisoning might arise from the occasional use of that substance in the carroting fluid. In some hat cleaning establishments, particularly the petty ones, open gas burners may give rise to sufficient carbon monoxide to bring about injury to those exposed.

THERAPY OF CORONARY THROMBOSIS

To the Editor:—In three cases clinically diagnosed as coronary occlusion on the first visit, the patients were given morphine sulphate hypodermically, amyl nitrite by inhalation and caffeine sodiobenzoate hypodermically and then one or two tablets of nitroglycerin compound (DaCosta), Upjhon. In each case the patients died in from three to five minutes after receiving the nitroglycerin compound tablets. Is it contraindicated to give glyceryl trinitrate in a dosage of 1/100 grain (0.6 mg.) in a case of coronary occlusion? In the cases mentioned do you believe that the administration of the nitroglycerin (glyceryl trinitrate) compound tablets was responsible for the sudden deaths? Kindly omit name.

M.D., California.

ANSWER.—It is contraindicated to give either glyceryl trinitrate or amyl nitrite in cases of coronary thrombosis and especially in cases in which the blood pressure has fallen at the onset. Alarming syncopal symptoms occur at times even in apparently normal individuals. There is no certainty that the administration of glyceryl trinitrate caused the death of these patients. It is frequently used in such cases with safety, but it is always inadvisable and dangerous.

TREATMENT OF "SPIDER BURST" VARICOSE VEINS

To the Editor:—Can you outline a treatment for small "spider burst" or "skyrocket" varicose veins in a young woman who seeks relief because of their unsightly appearance on her legs when exposed on the beach? She has had no palpable, enlarged or dilated variocose veins such as are suitable for injection. There is no edema present, and she has never had phlebitis.

WILLIS P. BAKER, M.D., Santa Ana, Calif.

ANSWER.—The treatment for a spider burst is difficult and usually unsatisfactory. At times, after distending the veins with the help of a tourniquet, one can find a larger venous pocket, the so-called key-vein, which when obliterated will cause a shrinkage and fading of the small cutaneous varices. Another method is to take a fine intestinal needle, dip it into a 5 per cent solution of sodium morrhuate or 50 per cent dextrose solution, and puncture the individual branches of the spider burst. This may require a great many punctures and

may produce hematomas, which may leave a brownish discoloration. Another possibility is to take a surgical diathermy current and with a very fine tip coagulate the blood in several of the larger varicosities.

Of all these suggestions the only satisfactory method is the injection of the feeder vein. Even this method, however, will not give a cosmetic result.

COPPER SULPHATE IN SWIMMING POOLS

To the Editor:—In a local salt water swimming tank, copper sulphate is used in the proportion of 1: 160,000 to retard marine growth. Would 1: 80,000 be injurious to the eyes or skin or dangerous if some of it should be accidentally swallowed? Please omit my name.

M.D., California.

ANSWER.—The amount of copper sulphate stated is far greater than that usually required to prevent organic growth in swimming pools. However, most of the data available apply to fresh water tanks. If the water is alkaline, much of the copper would be precipitated and larger doses would be necessary under these conditions. The dosage usually employed in fresh water tanks and reservoirs is in the neighborhood of 1 part per million. The dosage must be varied with the type of growth in the tank, since some organisms are far more sensitive than others to copper salt. It is doubtful whether occasional swallowing of a small amount of water containing 1 part of copper sulphate in 80,000 would be in any way dangerous. The government standard of 0.2 part of copper per million would not be applicable to swimming pool conditions because of the relatively small amount of swimming pool water consumed.

PHYSIOLOGIC SOLUTION OF SODIUM CHLORIDE INTRAVENOUSLY IN NEPHRITIS

To the Editor:—It is, I believe, fairly well agreed that sodium chloride should not be allowed patients who have nephritis. For a patient with uremia, unable to take much fluid by mouth, with no evidence of edema, what is the consensus regarding the giving of, say 2,000 or 3,000 cc. of physiologic solution of sodium chloride intravenously? Would this amount of sodium chloride cause further damage to the kidneys? Would it be preferable to give 5 per cent dextrose? Please omit name.

M.D., Mississippi.

ANSWER.—There is hardly a consensus on this subject. The objections to giving physiologic solution of sodium chloride to a nephritic patient without evidence of salt and water retention are more theoretical than real. However, since the difference in opinion does exist and since the object is to administer needed fluids, it would be preferable to give dextrose solution.

TRACING SCARLET FEVER CARRIERS

To the Editor:—In the July 21 issue of THE JOURNAL, page 208, there is a query concerning the spread and control of scarlet fever. You recommend a quarantine of the patient until cultures on blood agar plates are negative for scarlet fever streptococci. Kindly give the technic for culture and identification of these organisms. Do you consider this procedure of value in tracing scarlet fever carriers? Please omit name and address.

M.D., New York.

ANSWER.—Cultures from the nose and throat are made on freshly prepared blood agar plates. The plates are incubated over night and examined for the presence of hemolytic streptococci. If cultures continue to show the presence of hemolytic streptococci over a prolonged period, a specificity test may be made by testing a sterile filtrate from a broth culture of the organism for the presence of scarlet fever toxin.

SOLUTION OF ARSENOUS AND MERCURIC IODIDE FOR WARTS

To the Editor:—I have been told that a dermatologist in a southern state uses Donovan's solution internally for the treatment of warts, claiming that he has marked success with this treatment. Kindly tell me whether there is any scientific basis for such a method or if there is any reliable literature on the subject.

HENRI L. DUVRIES, M.D., Chicago.

ANSWER.—The beneficial use of Donovan's solution (solution of arsenous and mercuric iodide) is dependent on the contained arsenic and mercury. Arsenic and mercury, respectively, have been used for a long time in the treatment of verrucae. Their use, however, is empirical, and there has been considerable discussion as to the rôle of these drugs in the successful treatment of warts.

More recently the question of sulpharsphenamine in the treatment of warts has been discussed by Allington (*Arch. Dermat. & Syph.* **29**:687 [May] 1934), and he concludes that, in the treatment of warts, sulpharsphenamine injected intramuscularly appears to have little if any advantage over distilled water given in like manner.

CORONARY THROMBOSIS

To the Editor:—What is the ultimate prognosis for one (a man, aged 44) recovering from a coronary thrombosis? Can it ever be said that he is entirely well and will he ever be able to do arduous work and heavy lifting again? Please do not publish name.

M.D., District of Columbia.

ANSWER.—A definite prognosis cannot possibly be made. There is no accurate method of evaluating the damage done, and it is necessary to keep well within the limits of safety. A great many cases make what is apparently a complete recovery. It is possible that a patient could again do arduous work after a coronary thrombosis, but it is improbable, and he should by no means be allowed to attempt it. Activity should be increased only by small increments, after a long period of complete rest, and the extent of his future activities judged by his response.

Much of the prognosis will depend on the presence or absence of some underlying cardiac or vascular pathologic change.

TREATMENT OF LEAKAGE OF NEOARSPHENAMINE INTO TISSUES

To the Editor:—While neoarsphenamine was being injected intravenously, a little of the solution escaped into the tissues around the vein. It was only a few drops, as the patient immediately complained of pain and burning. It made quite an inflammation and considerable tenderness over a period of two weeks but is now better. Do you know of anything that may be injected into the area immediately to modify the severity of the inflammation; something like sterile water or, better, something that will make a chemical change?

JOHN RICHARD BOOTH, M.D., Oakland, Calif.

ANSWER.—The immediate injection of from 20 to 30 cc. of physiologic solution of sodium chloride, preferably with the addition of 0.5 per cent of procaine hydrochloride, should give relief. It is well to have this solution always ready at hand when injecting irritative solutions intravenously so that it may be injected immediately after the paravenous leakage while the needle is still in place.

TREATMENT OF GLUTEAL HERPES

To the Editor:—What remedies, used empirically, can you recommend for herpes of the gluteal region? So far as can be ascertained there are no pelvic or other pathologic changes, except chronic recurrent purulent pansinusitis. All the sinuses have been operated on. The patient is a woman, aged 35. Please omit name.

M.D., Chicago.

ANSWER.—In cases in which there is little or no pain or itching, protection by the liberal application of a dusting powder, such as thymol iodide, suffices, which is then covered with several layers of gauze kept in place by adhesive plaster. If there is much itching and burning, sponging several times a day with alcohol gives relief, which may be accentuated by the addition of 1 or 2 per cent of resorcinol or of menthol. A dusting powder of talcum with 3 per cent of camphor may be used in the intervals between the sponging, and the lesion covered with liberal dressing of gauze or cotton. When pain is a prominent symptom, the internal administration of analgesics, such as acetylsalicylic acid, amidopyrine or even morphine, is indicated.

TERMINAL EVENT IN AORTIC REGURGITATION

To the Editor:—What is the final event in aortic regurgitation? Does one get edema of the extremities and pulmonary congestion? Is it common to get a gallop rhythm? The literature that I have read on these conditions is usually under the heading of mitral stenosis or myocarditis. Please omit name.

M.D., South Carolina.

ANSWER.—There is no characteristic terminal event in aortic regurgitation. There are almost always other factors that are valent, as valvular lesions elsewhere, myocardial changes, vascular disease of the coronaries or the aorta, and disease of the kidneys. A case may show edema of the extremities and pulmonary congestion during its course or as a terminal event.

RETINITIS PIGMENTOSA

To the Editor:—I am seeking information regarding the treatment of retinitis pigmentosa by the method devised by Prof. Joseph Imre of Budapest. If you can send me any information regarding this, it will be greatly appreciated.

WILLIAM J. HARRINGTON, Appleton, Wis.

ANSWER.—The method proposed by Imre was the inhalation of amyl nitrite every second day for several months or even longer. He published this in the proceedings of the Deutsche Ophthalmologische Gesellschaft, forty-eighth meeting, 1930, page 279. The details of three cases that showed marked improvement in vision were recited and a cautious statement as to the therapeutic value of this method was made.

INDICATIONS FOR INSULIN IN DIABETES

To the Editor:—What is the consensus in regard to the use of insulin? Would it be advisable for a sugar-free diabetic patient (under restricted diet) to take a small dose in anticipation of a good meal once in a while? If it is true that a more liberal diet is beneficial, why not give insulin in all cases, whether mild or severe? Please omit name.

M.D., Massachusetts.

ANSWER.—It is not considered advisable for a diabetic patient, sugar free on a restricted diet without insulin, to break that diet. It is true that he may counteract the harmful effect of breaking the diet by taking insulin, but this is certainly not good treatment. The diet should be made adequate in every nutritional respect, and if the patient cannot tolerate it he should use insulin. On the other hand, adequately nourishing diets can be arranged that will permit many patients with mild diabetes to remain sugar free without insulin. The advantage in this is principally an economy, although many authorities in diabetes believe that moderate restriction of carbohydrates and careful limitation of calories to actual requirements is desirable in most cases of diabetes whether insulin is taken or not.

PROGRESSIVE MYOPIA

To the Editor:—Is there any approved surgical treatment of progressive myopia other than enucleation of the crystalline lens? Please omit name.

M.D., Pennsylvania.

ANSWER.—No.

RUPTURED EARDRUM AND TELEPHONE RECEIVER VIBRATION

To the Editor:—In reply to the query by Dr. Milton Wolpert of Chester, W. Va. (THE JOURNAL, July 28, p. 282), I would like to relate my own experience with ruptured eardrum due to sudden excessive increase in telephone receiver diaphragm vibration. In 1925, while interning at the Metropolitan Hospital, I had occasion to use the telephone booth at the staff house. After I had dropped my coin and while I was speaking to the operator there was a sudden terrific "crack" as (it seemed to me) she connected my wire with the proper central station. I reeled half way round in the booth, my brain in a whirl. I fell against the door, somewhat dizzy. My heart palpitated to a marked degree and I walked out of the telephone booth and asked a doctor friend to examine my ear, explaining to several present what had occurred. I was told what I already knew—that there was a rupture of the right eardrum and a drop of blood on the membrane itself. I had some difficulty in hearing for two or three days and forgot about it (using no treatment but a sterile pledget of cotton in the canal). Previously in my boxing matches at college and several months before at the same hospital I had occasion to experience ruptured eardrum when in one case a student landed with an open palm on my left ear. I experienced the same effect. Examination revealed a ruptured drum. The same eardrum was ruptured in a second boxing match when a doctor at the hospital (the doctor weighing 200 pounds and 6 feet tall) landed with an open palm on my much abused ear, with exactly the same series of symptoms and signs. I mention these friendly encounters only to suggest that I could recognize a ruptured drum even without otoscopic examination. I intended, I might add, to institute proceedings against the telephone company, had any sort of complication set in. It is surprising the great sudden power set up in that auditory canal if the receiver is pressed tightly to the ear —which I never do any more and which I advise every one not to do.

MICHAEL WISHENGRAD, M.D., New York.

MUSCLE CRAMPS DURING SLEEP

To the Editor:—In Queries and Minor Notes in THE JOURNAL, August 18, is a communication from a New York physician on muscle cramps during sleep. During years of practice, especially with diabetic patients, who are very prone to such cramps, I have found an almost infallibly successful treatment. Dilute hydrochloric acid, from 10 to 15 drops in water with each meal, will completely relieve most cases within a day or two. When intestinal putrefaction is present, to augment the alkalosis by absorption of the alkaline amines, kaolin therapy is advisable in addition to the acid. The kaolin is best given finely suspended in syrup, one-fourth ounce morning and evening.

C. A. MILLS, M.D., Cincinnati.
Professor of Experimental Medicine, University of Cincinnati College of Medicine.

DOWELL TEST OF PREGNANCY

To the Editor:—M.D., Pennsylvania (THE JOURNAL, August 18, p. 510), rightly questions Dr. Dowell for exact details of his test. May I call the attention of both to the fact that the test is neither original nor reliable and refer them to an article on the same subject by the writer and printed in the *American Journal of Surgery* (**8**: 1271 [June] 1930). In this article I refer to the originators of the test, Drs. Porges and Pollatschek of Vienna, and claim no originality whatever. However, I present a moderate series of cases by this test and prove statistically that it is neither definite nor reliable. In addition, a personal communication from the authors is brought out in which their final results do not coincide with their glowing praise in the original paper. The conclusions of a Dr. Deutsch of Vienna also coincide with mine, as brought out in the paper.

HYMAN STRAUSS, M.D., Brooklyn.

Council on Medical Education and Hospitals

COMING EXAMINATIONS

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written (Group B candidates).* The examination will be held in various centers throughout the country, Oct. 1. *Oral (Group A and Group B candidates).* San Antonio, Texas, Nov. 13-16. Sec., Dr. C. Guy Lane, 416 Marlborough St., Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: *Written (Group B candidates).* The examination will be held in various cities of the United States and Canada, Nov. 3. Sec., Dr. Paul Titus, 1015 Highland Bldg., Pittsburgh.

AMERICAN BOARD OF OPHTHALMOLOGY: San Antonio, Texas, Nov. 13; Philadelphia, June 10. Sec., Dr. William H. Wilder, 122 S. Michigan Blvd., Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: San Antonio, Texas, Nov. 16. Sec., Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha.

ARIZONA: Phoenix, Oct. 2-3. Sec., Dr. J. H. Patterson, 320 Security Bldg., Phoenix.

ARKANSAS: *Basic Science.* Little Rock, Nov. 5. Sec., Mr. Louis E. Gebauer, 701 Main St., Little Rock. *Regular.* Little Rock, Nov. 12. Sec., Dr. A. S. Buchanan, Prescott. *Eclectic.* Little Rock, Nov. 13. Sec., Dr. L. L. Marshall, 820 W. 14th St., Little Rock.

CALIFORNIA: Sacramento, Oct. 15-18. Sec., Dr. Charles B. Pinkham, 420 State Office Bldg., Sacramento.

COLORADO: Denver, Oct. 2. Sec., Dr. Wm. Whitridge Williams, 422 State Office Bldg., Denver.

CONNECTICUT: *Basic Science.* New Haven, Oct. 13. *Prerequisite to license examination.* Address, State Board of Healing Arts, 1895 Yale Station, New Haven. *Regular.* Hartford, Nov. 13-14. *Endorsement.* Hartford, Nov. 27. Sec., Dr. Thomas P. Murdock, 147 W. Main St., Meriden. *Homeopathic.* New Haven, Nov. 13. Sec., Dr. Edwin C. M. Hall, 82 Grand Ave., New Haven.

FLORIDA: Tampa, Nov. 12-13. Sec., Dr. William M. Rowlett, Box 786, Tampa.

GEORGIA: Atlanta, Oct. 9-10. Joint Secretary, State Examining Boards, Mr. R. C. Coleman, 111 State Capitol, Atlanta.

IDAHO: Boise, Oct. 2. Commissioner of Law Enforcement, Hon. Emmitt Pfost, 205 State House, Boise.

ILLINOIS: Chicago, Oct. 16-18. Superintendent of Registration, Department of Registration and Education, Mr. Eugene R. Schwartz, Springfield.

IOWA: Des Moines, Oct. 8-10. Dir., Division of Licensure and Registration, Mr. H. W. Grefe, Capitol Bldg., Des Moines.

MAINE: Portland, Nov. 13-14. Sec., Board of Registration of Medicine, Dr. Adam P. Leighton Jr., 192 State St., Portland.

MASSACHUSETTS: Boston, Nov. 13-15. Sec., Board of Registration in Medicine, Dr. Stephen Rushmore, 144 State House, Boston.

MICHIGAN: Lansing, Oct. 9-11. Sec., Board of Registration in Medicine, Dr. J. Earl McIntyre, 202-3-4 Hollister Bldg., Lansing.

MINNESOTA: *Basic Science.* Minneapolis, Oct. 2-3. Sec., Dr. J. Charnley McKinley, 126 Millard Hall, University of Minnesota, Minneapolis. *Medical.* Minneapolis, Oct. 16-18. Sec., Dr. E. J. Engberg, 350 St. Peter St., St. Paul.

MISSOURI: Kansas City, Oct. 24. State Health Commissioner, Dr. E. T. McGaugh, State Capitol Bldg., Jefferson City.

MONTANA: Helena, Oct. 2. Sec., Dr. S. A. Cooney, 7 W. 6th Ave., Helena.

NEBRASKA: *Basic Science.* Lincoln, Oct. 2-3. Dir., Bureau of Examining Boards, Mrs. Clark Perkins, State House, Lincoln.

NEVADA: Carson City, Nov. 5. Sec., Dr. Edward E. Hamer, Carson City.

NEW JERSEY: Trenton, Oct. 16-17. Sec., Dr. James J. McGuire, 28 W. State St., Trenton.

NEW MEXICO: Santa Fe, Oct. 8-9. Sec., Dr. P. G. Cornish Jr., 221 W. Central Ave., Albuquerque.

OREGON: *Basic Science.* Portland, Nov. 17. Sec., Mr. Charles D. Byrne, University of Oregon, Eugene.

RHODE ISLAND: Providence, Oct. 4-5. Dir., Public Health Commission, Dr. Lester A. Round, 319 State Office Bldg., Providence.

SOUTH CAROLINA: Columbia, Nov. 13. Sec., Dr. A. Earle Boozer, 505 Saluda Ave., Columbia.

TENNESSEE: Memphis, Oct. 1-2. Sec., Dr. H. W. Qualls, 130 Madison Ave., Memphis.

WYOMING: Cheyenne, Oct. 1. Sec., Dr. W. H. Hassed, Capitol Bldg., Cheyenne.

New York January-February Examination

Mr. Herbert J. Hamilton, chief, Professional Examinations Bureau, reports the written examination held by the New York State Board of Medical Examiners in Albany, Buffalo, New York and Syracuse, Jan. 29-Feb. 1, 1934. The examination covered 9 subjects. One hundred and ninety candidates were examined, 146 of whom passed and 44 failed. The following schools were represented:

PASSED		
School	Year Grad.	Number Passed
University of Arkansas School of Medicine	(1933)	1
Yale University School of Medicine	(1931), (1932, 3)	4
George Washington University School of Medicine	(1933, 4)	4
Georgetown Univ. School of Med.	(1930), (1932, 4), (1933)	6
Emory University School of Medicine	(1931)	1
Loyola University School of Medicine	(1930), (1933)	2
Rush Medical College	(1933, 2)	2
University of Louisville School of Medicine	(1931), (1932)	2

Louisiana State University Medical Center.....(1934) 1
Johns Hopkins University School of Medicine.....(1921) 1
University of Maryland School of Medicine and College of Physicians and Surgeons....(1929), (1932), (1933) 3
Boston University School of Medicine.....(1932), (1933) 2
Harvard University Medical School.....(1932) 1
Tufts College Medical School.....(1931), (1933, 2) 3
University of Michigan Medical School.....(1933) 1
St. Louis University School of Medicine.(1932, 2), (1933, 3) 5
Creighton University School of Medicine.....(1933) 1
University of Nebraska College of Medicine.....(1932) 1
Albany Medical College.....(1933, 3) 3
Columbia Univ. College of P. and S..(1931), (1932, 4), (1933) 6
Cornell Univ. Medical College...(1931), (1932, 2), (1933, 3) 6
Long Island College of Medicine.....(1933, 6) 6
N. Y. Homeopathic Med. College and Flower Hosp.(1933, 2) 2
New York University, University and Bellevue Hospital Medical College.....(1931), (1932), (1933, 13) 15
Syracuse University College of Medicine.....(1933, 2) 2
University of Buffalo School of Medicine.....(1933, 8) 8
University of Rochester School of Medicine.(1930), (1933, 3) 4
Hahnemann Medical College and Hosp. of Philadelphia.(1933) 1
Jefferson Medical College of Philadelphia.....(1932) 1
Temple University School of Medicine....(1932, 2), (1933, 3) 5
Univ. of Pennsylvania School of Med..(1931), (1932), (1933) 3
Woman's Medical College of Pennsylvania....(1932), (1933) 2
Meharry Medical College.....(1933) 1
University of Vermont College of Medicine.(1932, 2), (1933) 3
Queen's University Faculty of Medicine.....(1931), (1932) 2
McGill University Faculty of Medicine.....(1929, 2), (1930), (1932), (1933, 2) 6
University of Adelaide Faculty of Medicine.....(1923) 1
Karl-Franzens-Universität Medizinische Fakultät, Austria .....(1929) 1
Medizinische Fakultät der Universität Wien.(1932),* (1933)* 2
Deutsche Universität Medizinische Fakultät, Cze.(1925), (1929) 2
Universita Karlova Fakulta Lékařská, Cze.....(1931) 1
Regia Università degli Studi di Roma. Facoltà di Medicina e Chirurgia.....(1931, 2) 2
Licentiate of the Royal College of Physicians and of the Royal College of Surgeons of Edinburgh, and of the Royal Faculty of Physicians and Surgeons of Glasgow .....(1933) 1
School of Medicine of the Royal Colleges, Edinburgh.(1933, 2)* 2
University of Edinburgh Faculty of Medicine.....(1932) 1
University of Glasgow Medical Faculty.....(1933)* 1
University of St. Andrews Conjoint Medical School, Scotland .....(1933, 4),* (1933, 8) 12
Universität Bern Medizinische Fakultät.....(1933)* 1
Université de Genève Faculté de Médecine.....(1933) 1
American University of Beirut School of Medicine....(1933)* 1

FAILED

School	Year Grad.	Number Failed
Georgetown University School of Medicine	(1933)	1
Emory University School of Medicine	(1933)	1
University of Georgia School of Medicine	(1930)	1
Loyola University School of Medicine	(1932), (1933, 2)	3
Louisiana State University Medical Center	(1934)	1
Tulane University of Louisiana School of Medicine	(1932)	1
Boston University School of Medicine	(1931)	1
Columbia Univ. College of P. and S.	(1931), (1932)	2
Long Island College of Medicine	(1933)	1
University of Buffalo School of Medicine	(1930)	1
Hahnemann Medical College and Hospital of Philadelphia	(1932, 2), (1933)	3
Temple University School of Medicine	(1931)	1
University of Pittsburgh School of Medicine	(1931)	1
Woman's Med. College of Pennsylvania.	(1924), (1927), (1933)	3
University of Montreal Faculty of Medicine	(1925)	1
Medizinische Fakultät der Universität Wien	(1926), (1929),* (1932)*	3
Univerzita Komenského Fakulta Lekárska, Cze.	(1929)	1
Université de Paris Faculté de Médecine	(1930)	1
Friedrich-Alexanders-Universität Medizinische Fakultät, Erlangen	(1930)	1
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin	(1930),* (1931)	2
Regia Università degli Studi di Bologna. Facoltà di Medicina e Chirurgia	(1929)*	1
Regia Università di Napoli Facoltà di Medicina e Chirurgia	(1924), (1931)	2
Regia Università degli Studi di Palermo Facoltà di Medicina e Chirurgia	(1929)	1
Licentiate of the Royal College of Physicians and of the Royal College of Surgeons of Edinburgh, and of the Royal Faculty of Physicians and Surgeons of Glasgow.	(1931)	1
Universität Bern Medizinische Fakultät.	(1926), (1931), (1933)	3
Université de Genève Faculté de Médecine	(1933, 2)*	2
Beogradskog Universiteta Medecinski Fakultet, Yugo.	(1930)*	1
Osteopaths		3

One hundred and sixty-one candidates were licensed by endorsement from January 1 to June 1. The following schools were represented:

LICENSED BY ENDORSEMENT

School	Year Grad.	Endorsement of
University of Colorado School of Medicine	(1931)	N. B. M. Ex.
Yale University School of Medicine	(1931, 2), (1932)	N. B. M. Ex., (1932) Delaware
George Washington University School of Medicine	(1926)	Virginia
Georgetown University School of Medicine	(1930) (1932)	Ohio, N. B. M. Ex., (1931), (1933) Maryland
Howard University College of Medicine	(1932)	N. B. M. Ex.
Northwestern University Medical School	(1933)	N. Carolina
Indiana University School of Medicine	(1925) (1931, 2)	Penna., Indiana
State University of Iowa College of Medicine	(1932)	Iowa
University of Kansas School of Medicine	(1928)	Kansas
University of Louisville School of Medicine	(1931)	N. B. M. Ex.
College of Physicians and Surgeons, Baltimore	(1913)	Puerto Rico
Johns Hopkins Univ. School of Medicine.(1928, 2),	(1930)	Maryland
University of Maryland School of Medicine and College of Physicians and Surgeons. (1932) N. B. M. Ex. (1929), (1933) Maryland.		
Boston University School of Medicine	(1931)	N. B. M. Ex.
Harvard University Medical School	(1912) (1928, 3) (1929), (1930), (1931, 2)	Ohio, N. B. M. Ex., (1932) New Jersey
Tufts College Medical School.(1924)		Massachusetts, (1932) N. B. M. Ex.
University of Michigan Medical School	(1930)	N. B. M. Ex.
University of Minnesota Medical School	(1929), (1930)	Minnesota
Washington University School of Medicine	(1931)	N. B. M. Ex.
Albany Medical College	(1932)	N. B. M. Ex.
Columbia University College of P. and S., (1930), (1931, 7) (1932, 3) N. B. M. Ex., (1932) New Jersey	(1927),	
Cornell University Medical College.(1930),	(1931, 2),	(1932) N. B. M. Ex.
New York Homeopathic Med. Coll. and Flower Hosp.	(1932)	New Jersey
New York University, University and Bellevue Hospital Medical College	(1932)	N. B. M. Ex., 2, New Jersey
Syracuse University College of Medicine	(1931)	N. B. M. Ex.
University of Buffalo School of Medicine	(1932)	N. B. M. Ex.
University of Rochester School of Medicine..(1930), (1932) N. B. M. Ex.		Maryland,
Duke University School of Medicine	(1932)	N. Carolina
Cleveland University of Medicine and Surgery	(1895)	Ohio
University of Cincinnati College of Medicine..(1929),	(1932)	Ohio
Western Reserve University School of Medicine	(1931)	Ohio
University of Oklahoma School of Medicine	(1928)	California
University of Oregon Medical School	(1913)	Washington
Jefferson Medical College of Philadelphia..(1904), (1919) Puerto Rico, (1931, 2) North Carolina	(1927)	Penna.,
University of Pennsylvania Department of Medicine.(1906)		Penna.
University of Pennsylvania School of Medicine	(1917) (1932) N. B. M. Ex., North Carolina	Illinois,
University of Pittsburgh School of Medicine	(1920)	Penna.
Woman's Medical College of Pennsylvania	(1905) (1905), (1930) New Jersey, (1928) California, (1030)	Mass., N. B. M. Ex.
Meharry Medical College	(1932)	North Carolina, (1933) Tennessee
University of Tennessee College of Medicine.(1931, 2),	(1932)	Tennessee
Vanderbilt University School of Medicine	(1915), (1932)	Tennessee
Baylor University College of Medicine	(1931)	Texas
University of Texas School of Medicine	(1929)	Texas
Univ. of Vermont College of Med..(1895)		Vermont, (1930) N. B. M. Ex.
Medical College of Virginia	(1931)	Virginia
University of Virginia Department of Medicine	(1930)	Virginia
University of Wisconsin Medical School	(1931)	New Jersey
University of Western Ontario Medical School	(1927)	Michigan
McGill University Faculty of Medicine	(1922) (1930), (1932) N. B. M. Ex.	Ontario,
Medizinische Fakultät der Universität Wien	(1894),* (1919)* (1903)*	Austria
Deutsche Universität Medizinische Fakultät, Cze.	(1927)*	Cze.
Université de Paris Faculté de Médec ine	(1928)	Diploma
Albert-Ludwigs-Universität Medizinische Fakultät, Freiburg	(1898),* (1909),*(1909), (1924)*	Germany
Christian-Albrechts-Universität Medizinische, Fakultät, Kiel	(1920),* (1923)*	Germany
Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, (1914),* (1919),* (1920),* (1921),* (1922, 2),* (1923, 3),* (1925 2),* (1926),* (1927),* (1928)		Germany
Johann Wolfgang Goethe-Universität Medizinische Fakultät, Frankfurt-am-Main	(1917),* (1920),* (1923)*	Germany
Julius-Maximilians-Universität Medizinische Fakultät, Würzburg	(1902),* (1914)*	Germany
Ludwig-Maximilians-Universität Medizinische Fakultät, München	(1916),* (1924, 3),* (1927)*	Germany
Rheinische Friedrich-Wilhelms-Universität, Bonn	(1920)*	Germany
Schlesische-Friedrich-Wilhelms-Universität Medizinische Fakultät, Breslau	(1915)*	Germany
Universität Heidelberg Medizinische Fakultät	(1909),* (1921),* (1922),* (1923),* (1923)	Germany
Universität Leipzig Medizinische Fakultät	(1904)*	Germany
Regia Università di Napoli Facoltà di Medicina e Chirurgia	(1929)	New Jersey
Regia Università degli Studi di Palermo. Facolta di Medicina e Chirurgia	(1924)	New Jersey
Regia Università degli Studi di Roma. Facoltà di Medicina e Chirurgia	(1931)*	New Jersey
Universitatea Regele Ferdinand I-iu din Cluj Facultatea de Medicină şi Farmacie	(1924)	Rumania
University of Kazan Faculty of Medicine, Russia.	(1916)*	Iowa
University of St. Vladimira Faculty of Med., Russia.	(1914)*	New Jersey
Universität Bern Medizinische Fakultät	(1928)	Switzerland
Universität Zürich Medizinische Fakultät	(1910)*	Switzerland
Donskey University Faculty of Medicine, Rostov-on-the-Don, U. S. S. R	(1921)*	U. S. S. R.
Osteopath		New Jersey

* Verification of graduation in process.

Book Notices

A Practical Treatise on Diseases of the Skin for the Use of Students and Practitioners. By Oliver S. Ormsby, M.D., Clinical Professor and Chairman of the Department of Dermatology, Rush Medical College of the University of Chicago. With Revision of the Histopathology in This Edition. By Clark Wylie Finnerud, B.S., M.D., Assistant Clinical Professor of Dermatology, Rush Medical College of the University of Chicago. Fourth edition. Cloth. Price, $11.50. Pp. 1288, with 622 illustrations. Philadelphia: Lea & Febiger, 1934.

Recognized as one of the leading textbooks in the field of dermatology, this work represents one of the most complete considerations of the subject anywhere available. Its history goes back many years. In its preparation, all the dermatologic literature is carefully reviewed. In the present edition thirty-six new diseases are described. The accounts of twenty diseases are rewritten and the entire book is reconstructed. One hundred and twenty-four new pictures have been added, since it is recognized that illustration is a vital accessory to any dermatologic publication. This volume is scientifically constructed for the teaching of dermatology, setting forth first a working knowledge of the microscopic anatomy and physiology of the skin and following with a general discussion of symptomatology, etiology, diagnosis and treatment. Then comes the consideration of individual diseases of the skin classified according to both pathologic conditions and etiologic considerations. These are the classifications suggested by Hebra and modified by many others. This textbook has made itself a distinct place in its field. It offers particularly valuable material on all distinctly dermatologic subjects. For occasional conditions with dermatologic manifestations but of a more general character, it sometimes is not quite satisfactory. Thus in the consideration of Vincent's disease there is no mention in treatment of the use of sodium perborate and there is the suggestion that arsphenamine be employed both locally and by injection. Although observers of diseases of the skin have begun to pay some attention to vitaminic deficiencies in relationship to skin disorders, the word vitamin is not found in the index. The volume is particularly adequate in its consideration of syphilis and the dermatologic manifestations of that disorder. The choice of the illustrations is for the most part excellent, although there are three pictures of vitiligo when one would fully suffice. The volume constitutes altogether one of the best reviews of dermatology available, particularly from the point of view of the histopathology of the skin. It should be available to every physician who even attempts to diagnose or treat dermatologic conditions.

Diseases Peculiar to Civilized Man: Clinical Management and Surgical Treatment. By George Crile, M.D. Edited by Amy Rowland. Cloth. Price, $5. Pp. 427, with 41 illustrations. New York: The Macmillan Company, 1934.

Among the diseases which occur particularly in civilized human beings and which apparently are not found in savages or in the lower animals are peptic ulcer, hyperthyroidism and neurocirculatory asthenia. In considering their causation, Dr. Crile traces the development of the human brain from the lowest form to the highest and elucidates his belief that the diseases mentioned belong to the group of kinetic diseases, which are diseases of pathologic physiology bred in our phylogeny, in which there is a sustained abnormally high activity of the entire brain and suprarenal sympathetic system. He considers the development of the suprarenal glands and the suprarenal sympathetic system and then takes up each of the diseases mentioned, supplying case histories and indicating the value of suprarenal denervation as a means of control. There is also a section devoted to epilepsy and diabetes, including case histories of the method as applied to these conditions, followed further by a discussion of combinations and by a discussion of the psychoneuroses and hypertension. The first suprarenalectomy was performed in October 1913. It was found later that suprarenalectomy did not answer the situation, so that the new operation of suprarenal denervation was developed. The author reports operations performed in seventy-six cases of true neurocirculatory asthenia with improvement or cure in 94 per cent, seventy-nine cases of hyperthyroidism with cure in 93.7 per cent, and thirty-seven cases of peptic ulcer with improvement or cure in 96.4 per cent. He feels that this introduces a new principle into medical thought and that the method should have extensive and careful consideration by the medical profession.

Le sérum normal: Récolte et caractères physiques. Par Denis Brocq-Rousseu et Gaston Roussel. Paper. Price, 75 francs. Pp. 363. Paris: Masson & Cie, 1934.

This is the first volume of a series on normal serum. The second volume will treat of the physiologic characteristics of serum and subsequent ones of the chemical. Much confusion has been caused because in the past certain authors have considered the words plasma and serum as equivalent. In this work the word serum is applied only to the fluid that exudes naturally after the clotting of the blood. And normal serum is the serum of an animal in good physiologic equilibrium not subjected to immunizing injections. The present volume deals with the collection and physical characters of normal serum. The collection of serum from the horse, man and other species, and its conservation, aging and putrefaction are described in detail. Then follow chapters on the physical properties—density, osmotic pressure, electrical conductivity, dialysis, ultrafiltration, electrodialysis, surface tension, viscosity, refractometric index, rotatory power, color, spectroscopy. Each chapter is complete by itself, giving the technical methods of study and the results obtained in recent investigations, with due regard to variations, physiologic as well as experimental and pathologic. Each chapter is provided with a bibliography, which goes to April 1, 1933. The references number 1,321 in all and occupy fifty-six pages. To the investigator the bibliography will be of much value. There can be no question that this is the beginning of a great work on serum of distinguished scholarship.

Charles Oliver Probst: A Pioneer Public Health Administrator in Ohio. Edited by Robert G. Paterson, Ph.D., Executive Secretary, Ohio Public Health Association. Boards. Pp. 70. Columbus: Ohio Public Health Association, 1934.

The edition of this book, privately printed, is limited to 300 copies. Whether or not one knew the physician in whose memory it is issued, whether or not one is interested in Ohio, it is an interesting and worth-while volume, showing as it does the typical early history of state health departments in the United States. Conceived as so many others were, in the minds of public spirited physicians and laymen, growing from tiny nuclei to great organizations in many instances, the health departments stand as the visible evidences of the early efforts of medical societies and lay groups to meet pressing problems of public health. Close cooperation between physicians and the health department was the guiding principle of Dr. Probst's policy, as reflected in the tributes paid to him at the memorial meeting held at Mount Vernon, Ohio, under the joint auspices of the Ohio State Sanatorium and the Ohio Public Health Association, both of which he was instrumental in founding. The state of Ohio has built a splendid health program on the beginnings which Dr. Probst struggled to achieve. The memorial volume outlines the achievements of Dr. Probst in public health work and his character as a physician, a sanitarian and a citizen. The bibliography of his writings indicates a wide interest in medical and public health matters, as well as literary appreciation.

Praktikum der wichtigsten Infektions-krankheiten. Von Prof. Dr. C. Hegler, Direktor des allgemeinen Krankenhauses St. Georg in Hamburg. Paper. Price, 4.50 marks. Pp. 186. Leipzig: Georg Thieme, 1934.

In the foreword the author states that he presents a condensed book for the practitioner. He makes no pretense of going into great detail with the diseases discussed but hopes that the subject matter will stimulate greater study. The views expressed are based almost wholly on personal experience. Among the infectious diseases, nearly all the common ones as well as those less frequently encountered are referred to. Limited mention, in most instances, is made of diseases carried or transmitted by animals. Some of the important food poisonings are mentioned. The author seems to emphasize the importance of the Diazo reaction in the exanthematous diseases and recommends numerous proprietary remedies in the treatment

of various infections. In regard to scarlet fever the opinion is set forth that the cause has not yet been definitely established; also that the frequency and severity of complications are little influenced by scarlet fever serum. There is nothing new in this book that might merit more favorable comment if it were not so lacking in many important details that are really desirable for the practitioner. In most respects, statements are much too indefinite to be of practical value. However, if the author's main objective in writing the book was merely brevity, he has succeeded admirably. The contents of the volume amount to little more than a medical dictionary of the subjects mentioned. It is particularly disappointing in view of the author's citation respecting his experience. In striving for brevity, an attempt has been made to crowd too large a field into too small a space.

Rhythm of Life: A Guide to Sexual Harmony for Women. By Sofie Lazarsfeld. Translated by Karsten and E. Pelham Stapelfeldt. Cloth. Price, $5. Pp. 329, with 12 illustrations. New York: Greenberg, 1934.

Recent years have seen the publication of a considerable number of works attempting to educate the public as to proper sex relations in life. This volume, by a woman physician, is addressed primarily to women. It discusses the development of marriage among the various peoples of the world. It then outlines the mechanism of sexual intercourse. It considers the position which woman occupies in modern society and calls attention to a rhythm of sex interest which apparently is to be followed carefully by those who wish to make the most of the physical side of married life. The author is inclined to recommend training in eroticism as a concomitant of a successful sex career. The concluding chapters of the book deal with cases from practice and the author's method of handling them. Presumably, in an effort to make the book more interesting to its readers, the publisher has supplied a number of illustrations which run the gamut from Rodin sculptures through pictures of various chastity girdles to an apotheosis with a picture of Mae West. While the book is of interest, its appeal to sensationalism so vulgarizes its content that one is hardly inclined to recommend it to the general reader.

A Short History of Some Common Diseases. By Divers Authors. Edited by W. R. Bett, M.R.C.S., L.R.C.P., Hon. Secretary, Section of History of Medicine, Centenary Meeting, British Medical Association. Cloth. Price, $3.50. Pp. 211. New York & London: Oxford University Press, 1934.

Here under one cover are assembled numerous references to a vast amount of literature presenting the progress medicine has made in controlling various diseases. A considerable number of competent British authors have combined in the development of the book. They not only indicate the names of those who have made studies but also the origins of words used in connection with various diseases, the dates of great epidemics and much miscellaneous information. Furthermore, short bibliographies are provided for those who wish to read further. One is invariably surprised at the antiquity of much of medical knowledge. The history of appendicitis is one of the most interesting chapters in the book. In this chapter adequate attention is paid to the contribution of Fitz. The author relates the popularity of appendicitis as a diagnosis in England to the operation performed on King Edward VII by Sir Frederick Treves. The volume is a most useful work of reference and also in many parts exceedingly readable.

Il cancro del retto. Da Vittorio Pettinari, aiuto e libero docente. Istituto di patologia chirurgica della R. Università di Milano. Paper. Price, 30 lire. Pp. 225, with 121 illustrations. Bologna: Licinio Cappelli, 1933.

This monograph on cancer of the rectum considers malignant conditions of the rectum and rectosigmoid from the clinical as well as the histologic standpoint. Excellent statistics are presented, showing the mortality and the clinical results of the various operative procedures, which are clearly and concisely described. The histologic sections collected are illuminating, and a study of them can be helpful to maintain one's capacity to interpret the microscopic appearance of malignant growths. With admirable erudition the author has done justice to all the main contributors to the clinical surgery of this important subject. A careful perusal of the monograph will reorganize one's knowledge of the subject and make possible a systematic comprehension of the recent advances that have been made.

A Textbook of the Practice of Medicine. By Various Authors. Edited by Frederick W. Price, M.D., F.R.S., Consulting Physician to the Royal Northern Hospital, London. Fourth edition. Cloth. Price, 36s. Pp. 1995, with illustrations. New York & London: Oxford University Press, 1933.

This leading British composite textbook of the practice of medicine is comprehensive, containing almost 2,000 pages printed on thin paper. The first edition appeared in September 1922, and there were five printings. The second edition was published in 1926 with two printings, and the third edition in 1929 with three printings. The present edition has been thoroughly revised and brought up to date, containing new articles on many subjects. The list of contributors to the volume includes twenty-seven British physicians whose names are notable in British medical periodical literature. Thus the vitamins are discussed by Plimmer, syphilis by Harrison, and the gastro-intestinal diseases by Hutchison and Hurst. The volume affords an adequate reflection of British methods of practice.

Woman as a Sexual Criminal. By Doctor Erich Wulffen. Translated into English by David Berger, M.A. Cloth. Price, $6. Pp. 528, with 16 illustrations. New York: American Ethnological Press, 1934.

This translation from the German is obviously printed to take advantage of the current especially heightened interest in sex matters. The publishers have circulated the medical profession with lurid circulars indicating the various ways in which women have run afoul of the law in sex satisfactions. The book is not especially well printed nor is it in any sense of the word a modern consideration of the subject. Most of the case reports seem to be taken from records of fifty and a hundred years ago.

The Span of Life as Influenced by the Heart, the Kidneys and the Blood Vessels. By Franklin R. Nuzum, B.S., M.D., F.A.C.P., Medical Director, Santa Barbara Cottage Hospital. Cloth. Price, $2. Pp. 108, with 9 illustrations. Springfield & Baltimore: Charles C. Thomas, 1933.

Dr. Nuzum prepared these essays as a series of informal talks to the public, making understandable the relationships of the heart, the kidneys and the blood vessels and indicating their influence in determining the length of human life. Whereas the vast majority of deaths in a previous generation were due to infectious diseases, the great number of deaths today are due to breakdown of the heart, the kidneys and the circulation. The greatest opportunity to increase the length of life still further depends on an understanding of the work of these organs and on the cooperation of the patient with the doctor in the hygiene of these organs. Dr. Nuzum has written in a manner which any intelligent reader can understand. His work should be exceedingly useful for reference by physicians to patients who need this advice in their cooperation.

The Cyclopedia of Medicine. George Morris Piersol, B.S., M.D., Editor-in-Chief, and Edward L. Bortz, A.B., M.D., Assistant Editor. Chief Associate Editors: W. Wayne Babcock, A.M., M.D., Conrad Berens, M.D., P. Brooke Bland, M.D., Francis L. Lederer, B.S., M.D., and A. Graeme Mitchell, M.D. Volumes VIII and IX: LAR-PRA. Fabrikoid. Price, $120 per set of 12 volumes and index. Pp. 1083; 1166, with illustrations. Philadelphia: F. A. Davis Company, 1933-1934.

Volumes VIII and IX of this encyclopedia cover medical subjects alphabetically from disorders of the larynx to potassium. The articles represent the work of many leading contributors to medical periodical literature. There is occasionally unevenness in the presentation, but on the whole the material is sound and adequate. There are some fine articles by Chevalier Jackson dealing with the lungs, by Cheney on the gallbladder, and by Boothby, Heiser, Mann and many other distinguished workers in the medical field. The editors have chosen extraordinarily well in their contributors, and the books may be generally recommended as competent and authoritative.

Medicación local pulmonar por via intratraqueal. Por el Dr. Vicente de Pablo, médico adscripto al Dispensario Nacional Antituberculoso (Zona Norte). Paper. Pp. 57, with 19 illustrations. Buenos Aires: Aniceto Lopez, 1933.

In this book the author describes his modifications in the technic and instruments used by García Vicente of Madrid for local medication of the bronchi and lungs by the transglottic route. After working with García Vicente, he was much impressed with the value of the latter's methods and introduced

them in Argentina. However, he felt that the technic and instruments were still not perfect and proceeded to modify them. For example, he changed to a more obtuse angle the tip of the syringe used for transglottic intratracheal injection, as well as the forceps used for introducing catheters. He also replaced the cone-shaped end of the tip of the syringe with a small olive perforated on all sides so as to permit more equal distribution of the medicament over the tracheal mucosa as soon as it is injected. De Pablo advocates the use of semirigid catheters for aspiration of the bronchi, which he regards as preferable, in some cases, to lavage. In conclusion he states that, since it is now possible to reach easily the exact area of lung that is diseased, aspirate it and convey medicaments directly to it, the discovery has been made of what will prove to be the most important avenue of approach for the treatment of pulmonary diseases. The book contains a preface by García Vicente and an ample bibliography.

Gesetz zur Verhütung erbkranken Nachwuchses vom 14. Juli 1933 mit Auszug aus dem Gesetz gegen gefährliche Gewohnheitsverbrecher und über Maszregeln der Sicherung und Besserung vom 24. Nov. 1933. Bearbeitet und erläutert von Dr. med. Arthur Gütt, Ministerialdirektor in Reichsministerium des Innern, Dr. med. Ernst Rüdin, o. ö. Professor für Psychiatrie an der Universität in München, und Dr. jur. Falk Ruttke, Geschäftsführer des Reichsausschusses für Volksgesundheitsdienst beim Reichsministerium des Innern. Mit Beiträgen: Die Eingriffe zur Unfruchtbarmachung des Mannes und zur Entmannung. Von Geheimrat Prof. Dr. med. Erich Lexer, München. Die Eingriffe zur Unfruchtbarmachung der Frau. Von Geheimrat Prof. Dr. med. Albert Döderlein, München. Paper. Price, 6 marks. Pp. 272, with 15 illustrations. Munich: J. F. Lehmanns Verlag, 1934.

This book lists and describes the recently enacted laws in Germany for the prevention of hereditary diseases. An introductory chapter deals with the family distribution of several supposedly inherited defects. The eight conditions for which sterilization is now mandatory—inborn feeblemindedness, schizophrenia, circular insanity, hereditary epilepsy, Huntington's chorea, hereditary blindness, hereditary deafness, and hereditary bodily deformities—and the further condition of "severe alcoholism" are discussed in detail. It is interesting to note that severe alcoholism is not considered hereditary but that incurable alcohol craving is believed to rest on a constitutional hereditary psychopathic basis and hence children of these individuals are not to be desired. A chapter on the technic of male sterilization by Lexer of Munich and one on the technic for females by Döderlein are added. Whatever one may think of the basis for these enactments in Germany, this book is and will remain an interesting document.

Constitution and Health. By Raymond Pearl, Professor of Biology in the Johns Hopkins University, Baltimore. Psyche Miniatures, General Series No. 60. Cloth. Price, 2/6. Pp. 97, with 9 illustrations. New York: Barnes & Noble, Inc.; London: Kegan Paul, Trench, Trubner & Co., Ltd., 1933.

Dr. Pearl offers here an expansion of a lecture given in 1933 at the Army Medical Center. In this statement Dr. Pearl indicates the present point of view of the relationship of constitution to health. He points out that the constitution of the individual may change during life, listing some of the studies that have been made on the relationship of body form to health and disease. His conclusion is rather striking—namely, that a careful statistical examination of rather accurate, if not very extensive, material does not yield evidence of any very marked or striking association between bodily habitus and general health. He points out that we are only at the beginning of any real knowledge in this field and that many vast statistical studies are necessary before any definite conclusions can be drawn.

Milton's Blindness. By Eleanor Gertrude Brown. Cloth. Price, $2.50. Pp. 167. New York: Columbia University Press, 1934.

The poet Milton, like many others afflicted by physical deformities, had a life much modified by his handicap. The author of this book has herself been blind almost from early youth and thus writes with a special sentiment. Portions of the book consider the cause of Milton's blindness, his own references to it, the reflections of his character in his poetry, and a final chapter entitled "Milton's Eyes Take a Holiday." This discusses the effects of the blindness, the autographs of Milton, praise and dispraise of his work and similar topics. A good bibliography makes the book complete.

Stand Up and Slim Down: Being Restoration Exercises for Women With Chapter on Food Selection in Constipation and Obesity. By Mrs. Ettie A. Hornibrook (Ettie Rout). Prefaces by Sir Arthur Keith, F.R.S., M.D., F.R.C.S., and Dr. A. C. Haddon, M.A., Sc.D., F.R.S. Second edition. Cloth. Price, $1.95. Pp. 167, with 16 illustrations. Garden City: Doubleday, Doran & Company, Inc., 1934.

The author has developed a series of exercises supposed to aid women in getting rid of protuberant buttocks and an overstuffed waistline. The book provides a series of exercises said to be useful for this purpose and also some diets said to be valuable for overcoming constipation as well as obesity. The author is especially inclined to recommend the dances much used by the savages in their religious and social efforts, commonly called the "danse du ventre" or more vulgarly known as the "belly dance."

L'immunité par mécanisme physico-chimique. Par R. Dujarric de la Rivière. Préface du Professeur d'Arsonval. Paper. Price, 18 francs. Pp. 73, with 2 illustrations. Paris: Masson & Cie, 1934.

The author summarizes here the results, previously published, of investigations by himself and his associates on the rôle of physicochemical factors in the action of certain disinfectants, on the flocculation of antimeningococcus serum, and on the adsorption of certain substances by the red corpuscles of the blood. The demonstration of the adsorption and transport by the red corpuscles of toxins, anatoxins (toxoids) and certain antisyphilitic medicaments is especially noteworthy.

The Fundamentals of Personal Hygiene Including Their Practical Application to Healthful Living. By Walter W. Krueger, Ph.B., Instructor in the Grand Rapids Junior College. Cloth. Price, $1.75. Pp. 291, with 60 illustrations. Philadelphia & London: W. B. Saunders Company, 1932.

This book is planned primarily for elementary students with a view to aiding them to a rational health program for daily living. It is an easily readable, pleasant textbook on personal hygiene, simply prepared, nicely illustrated and altogether sound. The author avoids faddism and follies.

Medicolegal

Validity of Regulation of Board of Health Excluding Unvaccinated Children from School.—City health officers in Indiana are authorized by Burns' Indiana Statutes Annotated, 1926, section 8168, "to establish quarantines and in connection therewith, to order what is reasonable and necessary for the prevention and suppression of disease, to close schools and churches and forbid public gatherings in order to prevent and stay epidemics, and in all reasonable and necessary ways to protect the public health." Further, an Indianapolis ordinance requires the city board of health whenever there is an epidemic of smallpox, or danger thereof, "to take measures and to do and order . . . such acts for the preservation and protection of the public health . . . as said Board may in good faith declare the public health and safety to demand," and to publish in the newspapers a notice of such epidemic or threatened epidemic. After this notice is published it is the duty of every inhabitant of Indianapolis of or over 6 years old, not immune to smallpox, to be vaccinated and a penalty is imposed on any person failing to do so. The Indianapolis Board of Health and Charities published in various newspapers a resolution stating that there was danger of a smallpox epidemic among school children, requiring all school children to be vaccinated, and excluding all unvaccinated children from school. The plaintiff, the father of an unvaccinated child excluded from school, sought to restrain the board from excluding his child from school. The trial court granted the injunction, after overruling the board's demurrer to the bill of complaint, and the board appealed to the Supreme Court of Indiana.

The plaintiff contended that there was in fact no epidemic. But, said the Supreme Court, the power to determine whether an epidemic exists is vested in the board of health and, in the absence of fraud or bad faith, the determination of the board is conclusive. The plaintiff next contended that the state statute authorizes the board to order what is reasonable and necessary for the prevention and suppression of disease only in connection with the establishment of quarantine, and that since no quaran-

tine had been established, no right to order vaccination had come into existence. But, answered the Supreme Court, the statute also vests in the board the power "to close schools and churches and forbid public gatherings in order to prevent and stay epidemics, and in all reasonable and necessary ways to protect the public health." This language the court regarded as a conclusive answer to the plaintiff's contention.

The Indianapolis ordinance, said the court, provides for and requires vaccination of every person over the age of 6 years, without any action by the board of health. The plaintiff contended, however, that the board undertook to exercise powers which it did not possess and which were not conferred by the city ordinance, in ordering the vaccination of school children. But, answered the Supreme Court, the recital in the published resolution of the board that all school children must be vaccinated was merely declaratory of the law as fixed by the ordinance. The part of the ordinance which required initiative on the part of the board of health was the order excluding unvaccinated children from the schools. This the board had ample power to do. The legislature intended to delegate to boards of health ample power to protect and safeguard the health of the community, and to vest in them authority to determine what reasonable steps are necessary to that end.

The court thought that another statute making it the duty of a parent to send his child to school had no connection with or relation to the statute under which the board of health may exclude a child who has not been vaccinated against contagious disease. Nor was there any merit found in the contention that the resolution of the board violated those provisions of the United States constitution and of the constitution of Indiana prohibiting the abridgment of religious and civil liberties and matters relating to conscience.

The Supreme Court reversed the judgment of the trial court and directed that the board's demurrer be sustained.—*Vonnegut v. Baun (Ind.), 188 N. E. 677.*

Evidence: Right of Medical Expert to Express Opinion as to Cause of Cerebral Hemorrhage.—The defendant insurance company issued to the insured a life insurance policy wherein it agreed to pay additional benefits if death "resulted independently and exclusively of all other causes, from bodily injuries effected directly from external, violent, and accidental means of which there was visible contusion or wound on the exterior of the body." Additional benefits were not payable if death resulted directly or indirectly, wholly or in part from any kind of illness or disease. The insured was injured in an automobile accident. He was found slumped over the steering wheel, with bruises almost surrounding the orbit of his left eye. He died shortly thereafter without regaining consciousness.

His widow, the beneficiary named in the policy, brought suit in the district court of the United States for the northern district of Illinois against the insurance company to recover the additional benefits. A physician testified on behalf of the widow that the insured had died from a cerebral hemorrhage, which was probably induced by the insured's face striking the object which caused the bruises. Another physician, who had performed an autopsy on the body, testified that the insured died from a cerebral hemorrhage due to high blood pressure, and not to any injury from the accident. Another physician testified that there was no connection between the abrasions or contusions on the insured's face and the cerebral hemorrhage. The widow moved to strike the testimony of the latter two witnesses on the ground that it invaded the province of the jury. The motion was denied and later there was a judgment for the insurance company. The widow then appealed to the United States circuit court of appeals, seventh circuit, contending that the district court erred in admitting the testimony of the two witnesses.

In the trial of this cause, said the circuit court of appeals, the introduction of testimony was governed by the rules of evidence established by the Supreme Court of Illinois and, on the point in question, the Illinois rule was clearly stated in *City of Chicago* v. *Didier*, 227 Ill. 571, 81 N. E. 698, as follows:

> There is some apparent confusion in the authorities on the question as to whether, in such cases as this, a medical expert may be asked his opinion as to whether the physical conditions of the injured party are the result of the injuries complained of. Where there is a conflict in the evidence as to whether the plaintiff was injured in the manner claimed, it is not competent for witnesses to give their opinions on that subject; but where there is no dispute as to the manner of the injury, and the question is as to whether certain physical conditions were caused by the injury complained of, and the determination of the question involves a special skill or trade, or a knowledge of science that does not come within the experience of laymen possessing the education or knowledge common to those moving in the ordinary walks and engaged in the ordinary occupations of life, then persons possessing the special knowledge, skill, or science may give their opinions on the subject. Appellant contends that the inquiry should be as to whether the injury might have produced the physical conditions, and not whether it did produce them. Expressions will be found in some cases tending to support that view; but the weight of authority in this state, as well as in other jurisdictions, does not support appellant's contention. . . .
>
> We think the apparent confusion of the authorities arises from a failure to distinguish between cases where the manner in which the injury is received is admitted and cases where the manner of the injury is denied.

In the instant case, there was no dispute whatever as to the happening of the accident, the manner in which it occurred, and the observable bodily injuries. The controversy concerning which the experts were permitted to testify was as to the result of those bodily injuries, and, in the opinion of the court, under the Illinois rule the questions were proper. The judgment of the district court was accordingly affirmed.—*Alexander v. Missouri State Life Ins. Co., 68 Fed. (2d) 1.*

Hospitals, Charitable: Liability for Burn with Hot Water Bottle.—The courts are practically agreed, says the Supreme Court of Errors of Connecticut, that a charitable institution is not responsible to those who avail themselves of its benefits for any injuries that may be sustained through the negligence of its agents or servants, in the selection of whom it has exercised due care. In the present case the plaintiff, a patient in the defendant hospital, while under an anesthetic following an operation received a burn from a hot water bottle placed in his bed, apparently by a hospital nurse. He sued the defendant hospital, an institution organized and operated for charitable purposes. The trial court overruled a demurrer interposed by the plaintiff to the hospital's plea of nonliability because of its charitable nature and entered judgment for the hospital. On appeal, the Supreme Court of Errors of Connecticut affirmed the judgment of the trial court.—*Cashman v. Meriden Hospital (Conn.), 169 A. 915.*

Society Proceedings

COMING MEETINGS

American College of Surgeons, Boston, Oct. 15-19. Dr. Franklin H. Martin, 40 East Erie Street, Chicago, Director-General.

American Society of Tropical Medicine, San Antonio, Texas, November 14-16. Dr. Henry E. Meleney, Vanderbilt University School of Medicine, Nashville, Tenn., Secretary.

Associated Anesthetists of the United States and Canada, Boston, Oct. 15-19. Dr. F. H. McMechan, 318 Hotel Westlake, Rocky River, Ohio, Secretary.

Association of Military Surgeons of the United States, Carlisle Barracks, Pa., Oct. 8-10. Dr. J. R. Kean, Army Medical Museum, Washington, D. C., Secretary.

Delaware, Medical Society of, Dover, Oct. 9-10. Dr. William H. Speer, 917 Washington Street, Wilmington, Secretary.

Indiana State Medical Association, Indianapolis, Oct. 9-11. Mr. T. A. Hendricks, 23 East Ohio Street, Indianapolis, Executive Secretary.

Inter-State Postgraduate Medical Association of North America, Philadelphia, November 5-9. Dr. W. B. Peck, 27 East Stephenson Street, Freeport, Ill., Managing-Director.

Kansas City Southwest Clinical Society, Kansas City, Mo., Oct. 1-4. Dr. Hugh Wilkinson, 750 Minnesota Avenue, Kansas City, Kan., Secretary.

Kentucky State Medical Association, Harlan, Oct. 1-4. Dr. A. T. McCormack, 532 West Main Street, Louisville, Secretary.

Ohio State Medical Association, Columbus, Oct. 4-6. Mr. Don K. Martin, 1005 Hartman Theatre Building, Columbus, Secretary.

Omaha Mid-West Clinical Society, Omaha, Oct. 29-Nov. 2. Dr. Joseph D. McCarthy, 107 South 17th Street, Omaha, Secretary.

Pacific Coast Society of Obstetrics and Gynecology, Oakland and Del Monte, Calif., November 21-23. Dr. Clarence A. De Puy, 230 Grand Avenue, Oakland, Secretary.

Pennsylvania, Medical Society of the State of, Wilkes-Barre, Oct. 1-4. Dr. Walter F. Donaldson, 500 Penn Avenue, Pittsburgh, Secretary.

Southern Medical Association, San Antonio, Texas, November 13-16. Mr. C. P. Loranz, Empire Building, Birmingham, Ala., Secretary.

Vermont State Medical Society, Burlington, Oct. 4-5. Dr. W. G. Ricker, 33 Main St., St. Johnsbury, Secretary.

Virginia, Medical Society of, Alexandria, Oct. 9-11. Miss Agnes V. Edwards, 1200 East Clay Street, Richmond, Secretary.

Current Medical Literature

AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Medical Sciences, Philadelphia

188: 145-300 (Aug.) 1934

Story of Development of Our Ideas of Chemical Mediation of Nerve Impulses. W. B. Cannon, Boston.—p. 145.
Inheritance of Diabetes Mellitus: II. Further Analysis of Family Histories. G. Pincus and Priscilla White, Boston.—p. 159.
Nonoperative Versus Operative Measures in Treatment of Pulmonary Tuberculosis. F. M. Pottenger, Los Angeles.—p. 169.
Tuberculosis Case Finding: Five Years' Experience with Fluoroscopy. Ada Chree Reid, New York.—p. 178.
Relationship of Intrinsic Factor to Hematopoietic Material in Concentrated Human Gastric Juice. O. M. Helmer, P. J. Fouts and L. G. Zerfas, Indianapolis.—p. 184.
Rôle of Liver in Hematopoiesis. S. M. Goldhamer, R. Isaacs and C. C. Sturgis, Ann Arbor, Mich.—p. 193.
Relation Between Deficiency of Solar Radiation and Mortality Due to Pernicious Anemia in United States. J. H. Smith, Richmond, Va.—p. 200.
*Bile Pigment and Hemoglobin Regeneration: Effect of Bile Pigment in Cases of Chronic Hypochromic Anemia. A. J. Patek Jr. and G. R. Minot, Boston.—p. 206.
Ineffective Use of Theelin in Case of Hemophilia: Note. L. L. Tureen, St. Louis.—p. 216.
Abdominal Disease Simulating Coronary Occlusion. P. S. Barker, F. N. Wilson and F. A. Coller, Ann Arbor, Mich.—p. 219.
Initial Ventricular Deflection of Electrocardiogram in Coronary Disease. T. M. Durant, Ann Arbor, Mich.—p. 225.
Atypical Bundle-Branch Block with Favorable Prognosis. H. T. Von Deesten and M. Dolganos, Secaucus, N. J.—p. 231.
Frequency and Significance of Right Bundle-Branch Block. R. H. Bayley, Ann Arbor, Mich.—p. 236.
*Persistent Functional Albuminuria: Analysis of Fifty-Eight Cases with Results of Thyroid and Calcium Medication. N. J. Burden, Philadelphia.—p. 242.
Relation of Negative Pressure in Epidural Space to Postpuncture Headache. W. M. Sheppe, Wheeling, W. Va.—p. 247.
Effect of Nonsedative Drugs and Other Measures in Migraine, with Especial Reference to Ergotamine Tartrate. S. Brock, Mary O'Sullivan and D. Young, New York.—p. 253.
Nucleoprotein and Specific Toxin Derived from Streptococcus Scarlatine Filtrate: Their Skin Reactions, Chemical and Immunizing Properties. Maud L. Menten, C. G. King, W. W. Briant Jr. and Leola Graham, Pittsburgh.—p. 260.
Incidence of Skin Diseases in Student Health Service. R. L. Gilman, Philadelphia.—p. 268.
Gonococcemia with Recovery: Report of Four Cases. C. K. Friedberg, New York.—p. 271.

Bile Pigment and Hemoglobin Regeneration.—Patek and Minot selected nine patients suffering from chronic hypochromic anemia in order to determine whether bile pigment could assist in hemoglobin production. Concentrated bile pigment alone caused not a reticulocyte response but an increase of hemoglobin, about 7 per cent in ten days. This indicates that in certain anemic patients bile pigment can be absorbed from the gastro-intestinal tract for building hemoglobin. After a reticulocyte response occurred to a suboptimal dose of iron, bile pigment was fed directly with the same dose of iron and there followed a second reticulocyte response. The second response was sometimes of greater magnitude than the first. This indicates that bile pigment in some unknown manner can facilitate either iron absorption or utilization. One patient, who could not obtain a normal hemoglobin level in fourteen months with large daily doses of iron, promptly increased her hemoglobin concentration when bile pigment was fed in addition to iron. In certain cases of hypochromic anemia there may be a deficiency of a useful material that is contained in bile pigment in addition to iron deficiency.

Persistent Functional Albuminuria.—Burden found nothing in the medical histories or in the physical examinations of fifty-six otherwise healthy male students with persistent functional albuminuria to account for the urinary abnormality. The kidney function as determined by the phenolsulphonphthalein and Mosenthal tests was normal. Cardiorenal disease in the parents of students with functional albuminuria was more than twice as frequent as in the parents showing no such abnormality. A tendency to low basal metabolism readings was found in 80.9 per cent, but in the ten cases tested with moderate doses of thyroid extract there was no improvement in the albuminuria. The blood serum calciums were normal in ten students with persistent functional albuminuria, although calcium medication had a favorable influence on the albuminuria in eleven of sixteen cases.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

32: 145-292 (Aug.) 1934

Interpretation of Ventriculograms, with Especial Reference to Tumors of Temporal Lobe. A. Torkildsen, Oslo, Norway, and A. H. Pirie, Montreal.—p. 145.
*Form, Size and Position of Maxillary Sinus at Various Ages Studied by Means of Roentgenograms of Skull. H. J. Sedwick, Rochester, N. Y.—p. 154.
*Chronic Intermittent Duodenal Stasis. J. Friedenwald and M. Feldman, Baltimore.—p. 161.
*Cholangiography: New Technic and Results. J. A. Saralegui, Buenos Aires, Argentina.—p. 167.
Migratory Cecum. J. Buckstein, New York.—p. 171.
Analysis of One Thousand Consecutive Examinations of Stomach and Duodenum from Clinical, Roentgenologic and Surgical Points of View: Particular Reference to Incidence, Diagnosis and Treatment of Gastric and Duodenal Ulcer and Carcinoma of Stomach. N. M. Percy and D. S. Beilin, Chicago.—p. 179.
Pellegrini-Stieda's Disease: Posttraumatic Calcification of Collateral Tibial Ligament of Knee. M. Ritvo and J. Resnik, Boston.—p. 189.
Supernumerary Rib Arising from Second Lumbar Vertebra. B. H. Nichols and E. L. Shiflett, Cleveland.—p. 196.
Is It Empyema or Collapsed Lung? E. Korol, Lincoln, Neb.—p. 198.
Radiation Therapy of Cancer of Skin. G. W. Grier, Pittsburgh.—p. 206.
Carcinoma of Lip: Results of Roentgen and Radium Treatment. B. P. Widmann, Philadelphia.—p. 211.
Roentgen Therapy in Dermatology. J. J. Eller, New York.—p. 218.
Training for Radium Therapy. W. H. Cameron, New York.—p. 222.
Studies on Effect of Continuous Exposure of Mice to Gamma Rays of Radium. J. Furth and D. H. Kabakjian, New York.—p. 227.
Physical Aspects of Various Qualities of Radiation. R. S. Landauer, Highland Park, Ill.—p. 235.

Maxillary Sinus Studied by Means of Roentgenograms.—Sedwick studied the shape, size, position, variation and measurements of the sinus in a representative group of roentgenograms of both sexes of various ages. He observed that the maxillary sinus varies greatly in shape, size and position, not only in different persons but in each side of the same person. The sinus reaches its maximal size during the third decade of life and does not increase thereafter. In the later decades there is a definite tendency toward the assumption of the triangular form. When the sinus is triangular, the position of its base varies. The relation between the floor of the sinus and that of the nasal cavity varies and is not a characteristic of sex. The sinus is in close proximity to the sides of the nasal cavity. The only difference between the sinuses in the white and the Indian skulls examined is that the vertical height is less in the Indians, a fact that might be correlated with the shorter nose and broader cheeks of the race. The average measurements for the sinus, based on 173 cases or 346 sinuses, are height 34 mm., width 25 mm., and anteroposterior length 39 mm. The average maximal and minimal measurements are height, maximal 46 mm., minimal 22 mm.; width, maximal 35 mm., minimal 17 mm.; anteroposterior length, maximal 51 mm., minimal 29 mm. The average height for men is 35 mm. and for women 34 mm. The average width for men is 25 mm. and for women 24 mm. The average length for both men and women is 40 mm.

Chronic Intermittent Duodenal Stasis.—Friedenwald and Feldman point out that in the intermittent type of duodenal stasis no pathologic changes are present, except those produced by superior mesenteric artery pressure associated with visceroptosis, adhesions and bands, or spinal deformities, movable growths and masses involving the abdominal organs, or ptosis of the right kidney producing pressure on the duodenum. Intermittent duodenal stasis may likewise be brought about by lesions elsewhere in the digestive tract producing reflex disturbances of motility in the duodenum. This disturbance occurs most frequently in women during middle life. The symptoms are not always characteristic. They frequently manifest themselves in the form of bilious and migraine attacks, indigestion, headaches and chronic constipation. The patients are usually

of the enteroptotic type. The roentgenologic signs of duodenal stasis are well defined and characteristic and may be the only means of arriving at a positive diagnosis. Owing to the intermittent character of this condition, however, the stasis may be present at certain examinations and not at others, and repeated studies must therefore be undertaken. The definite proof of the presence of intermittent duodenal stasis is the demonstration of a definite prolongation of the emptying of the duodenum during or immediately following an attack. In the treatment a carefully regulated diet, maintaining the general nutrition, frequent postural change and abdominal supports are of benefit. The essential problem is directed to overcoming the traction on the duodenum and the effects of the associated visceroptosis. Surgical intervention should not be advised except as a last resort, and when indicated duodenojejunostomy or division of the constricting bands is the best procedure.

Technic and Results of Cholangiography.—For the visualization of the sphincter of Oddi, the pancreatic duct and small intrahepatic ducts, Saralegui uses thorium dioxide sol. With the patient lying on his back the solution, heated to 37 or 38 C., is injected through the drainage tube and at the same time it is guided and observed through the fluoroscopic screen. It is necessary to inject enough opaque solution to be able to visualize all the intrahepatic ducts. Generally 20 or 30 cc. is sufficient, but more may be injected if necessary. The retention of the solution in the ducts does not produce any reaction, even in cases of total obstruction of the common duct. The results of five cases are reported.

American Review of Tuberculosis, New York

30: 123-238 (Aug.) 1934

Bronchial Stenosis in Pulmonary Tuberculosis: Some Notes on Tuberculous Stenosis of the Trachea and the Bronchioles. L. Eloesser, San Francisco.—p. 123.

*Artificial Pneumothorax in the Tuberculous Diabetic. J. J. Wiener and J. Kavee, New York.—p. 181.

Surgery in Tuberculosis Sanatorium. L. Fisher and B. L. Brock, Waverly Hills, Ky.—p. 187 .

Latent Pulmonary Tuberculous Infections in Chinese Adults of Professional Classes. G. A. M. Hall and C. P. Chang, Peiping, China.—p. 193.

Acid-Fast and Non-Acid-Fast Micro-Organisms in Skin Nodules of Tuberculin Reacting Cattle. L. L. Daines and H. Austin, Salt Lake City.—p. 209.

*Quantitative Tests on Nine Hundred and Forty-Four Tuberculous Adults with TPT (Seibert). M. R. Lichtenstein, Chicago.—p. 214.

Healing of Tuberculous Cavities: Study of Cavities in a Middle-Age Group. L. H. Fales and E. A. Beaudet, Livermore, Calif.—p. 225.

Artificial Pneumothorax in Tuberculous Diabetic Patients.—Wiener and Kavee treated twenty-six cases of active pulmonary tuberculosis complicated by diabetes mellitus with artificial pneumothorax. The cases chosen for treatment had active pulmonary tuberculosis with tendencies to progression and, with a single exception, were febrile. The age incidence of their patients closely approximated that observed in diabetic patients in the general population. In nineteen the left and in ten the right lung was collapsed. This number includes one in whom a bilateral pneumothorax was induced. The lesions were in the main those which have been described as the diabetic type best elicited with the aid of roentgenography. In the twenty-six cases, marked immediate improvement was noted in nine, slight symptomatic improvement in five, and no improvement in twelve cases, in three of which a free pleural space could not be found. The nine patients who showed marked immediate improvement are still alive and in excellent condition. Of these, six had bilateral lesions. They have been well for periods varying from twenty months to nine years. Of the five patients in whom only slight symptomatic improvement was noted soon after the initial induction, four died within a period of from five to nineteen months and one cannot be traced since he left the hospital. Eleven of the twelve patients who showed no improvement died within one and twenty months after the induction. The other patient did not improve at first, but subsequently, after the appearance of a massive effusion collapsing the lung quite completely, the course became afebrile and the disease quiescent. Improvement was often dramatic, with cessation of hemorrhage, decline of fever, and diminution of cough and quantity of sputum. The usual complications that occur following collapse therapy were observed just as frequently as in the nondiabetic tuberculous patient.

Quantitative Intracutaneous Tests in Tuberculosis.—Lichtenstein performed quantitative intracutaneous tests with tuberculin TPT (Seibert), the precipitated skin-reactive protein fraction from synthetic-medium tuberculin, on practically all the adults in the Chicago Municipal Tuberculosis Sanitarium within a period of a few weeks, with a view to determining the reliability of the product, the proportion of sensitive and nonsensitive patients and the relation of the level of skin sensitivity to various associated factors. Practically all the tuberculous patients reacted to TPT (Seibert) intracutaneously, with the exception of a few on the verge of death: 97.7 per cent reacted to the 1:1,000 dilution. Two thirds of those who did not react to this dilution were moribund. About one third (all of whom reacted to the 1:100 dilution) are still alive six months later. Quantitative studies indicate that skin sensitivity is progressively depressed with advancement of the lesion, with an increasing duration of the disease and with an increasing severity of the symptoms. Skin sensitivity is progressively increased with increasing degrees of lung compression. No evidence was found that allergy influences immunity. It seems rather that immunity indirectly influences allergy through the liberation of antigen.

Archives of Dermatology and Syphilology, Chicago

30: 177-336 (Aug.) 1934

*Follicular Lesions in Vitamin A and C Deficiencies. M. Scheer and H. Keil, New York.—p. 177.

Pigmented Mycotic Growth Beneath the Nail. W. J. Young, Louisville, Ky.—p. 186.

Value of Kline Precipitation Test for Detection of Syphilis in Applicants for Life Insurance. C. R. Rein and Marguerite Le Moine, New York.—p. 190.

*Rare Sweat Gland Tumor: Syringocystadenoma Nodularis. R. L. Sutton Jr., Kansas City, Mo.—p. 195.

Cutaneous Diphtheria in Congenital Syphilis: Report of Case. M. H. Cohen, York, Pa.—p. 207.

*Neurocutaneous Syndrome: Congenital Ectodermoses. G. V. Kulchar, San Francisco, and L. E. Anderson, Philadelphia.—p. 211.

Pachyonychia Congenita Jadassohn: Variety of Ichthyosis (Pachyonchia Ichthyosiformis) Involving Chiefly the Nails. F. A. Diasio, New York.—p. 218.

Dermatomyositis and Diffuse Scleroderma: Differential Diagnosis and Reports of Cases. W. G. Brock, Winnipeg, Manit.—p. 227.

American Leishmaniasis: Further Observations. H. Fox, New York.—p. 241.

New Cleansing Cream. J. G. Downing, Boston.—p. 243.

Early Nineteenth Century Dermatology and the Brothers Mahon. T. Rosenthal, New York.—p. 245.

Polyneuritis Following Neoarsphenamine Therapy: Report of Case with Associated Exfoliative Dermatitis. F. Kellogg and N. N. Epstein, San Francisco.—p. 251.

Superficial Pustular Folliculitis of the New-Born. S. Irgang and E. R. Alexander, New York.—p. 257.

Recent Changes in Dermatologic Diagnosis: Résumé of 1,112,050 Published Cases. A. W. Sohrweide, New York.—p. 260.

Follicular Lesions in Vitamin A and C Deficiencies.—Scheer and Keil report two cases of scurvy in adults, in which follicular lesions were present. In one instance the resemblance of the lesions to those described in vitamin A deficiency was striking; in the other the characteristic perifollicular papule of scurvy revealed such striking differences as to warrant separation from the lesion observed in vitamin A deficiency, in which the fundamental pathologic change seems to be in the epithelium, resulting in hyperkeratosis of the epidermis and of the hair follicles. The lesion is not accompanied by inflammatory changes in the cutis (except secondarily), and, most important, hemorrhage does not seem to occur. Ulceration appears to depend on the lowered resistance of the tissues in patients who are undernourished. On the other hand, the fundamental process in scurvy resides in the capillaries of the upper cutis in the region of the hair follicles. As a secondary result, the hyperkeratosis is mainly limited to the hair follicles. Early in the process, hemorrhage of a minor degree occurs interstitially. This is, however, not always clinically discernible. In the authors' second case, the dull red color of the papule was explained by the congestion in the perifollicular capillaries and the moderate interstitial hemorrhage. When the hemorrhage becomes sufficiently intense, the typical perifollicular petechia of scurvy results. This was artificially accomplished in the second case by means of the tourniquet test, in which the maximal capillary fragility was demonstrated to be almost entirely confined to the perifollicular vasculature. The early occurrence of a positive tourniquet test, which becomes negative when the disease is properly treated, illustrates the point that vascular damage is the fundamental pathologic process in scurvy.

Rare Sweat Gland Tumor: Syringocystadenoma Nodularis.—Sutton cites a case in which discrete nodules appeared unilaterally on the neck of a woman, aged 45. Histologic examination led to a diagnosis of a rare form of tumor of the sweat glands. The origin in the sweat glands was postulated on the observations that the tumor was of two-layered epithelial cylinder structure and that less highly evolved nodules of syringoma occur at the periphery of larger nodules. The basic architectonic scheme of the nodules in this case is the secretory tubule surrounded by neoplastic proliferation of sheath cells. It is conjectured that a sudoriparous neoplasm with the growth urge emphasized on the secretory cell layer produces the classic syringocystadenoma, while, if sheath cells are predominately active, firmer, larger nodular growths occur, as seen in this case and in that of Paul and Adamson. The case described is an instance of tumor of the sweat glands, microscopically cystic and alveolar in structure, and clinically nodular in appearance; it is properly named syringocystadenoma nodularis.

Neurocutaneous Syndrome: Congenital Ectodermoses.—Kulchar and Anderson present a case that does not conform to any of the three heretofore recognized types of the neurocutaneous syndrome. The widespread distribution of the congenital anomalies involving the face, extremities, spinal cord and probably the brain is the most unusual feature. The occurrence of the nevi on the extremities in association with changes in the central nervous system is infrequent in the heretofore reported cases of the neurocutaneous syndrome. Cobb reported a somewhat similar case in which the nevi were few and small, while the lesion of the spinal cord was localizable at the level of the same metamere. In their case the authors assume, in view of the wide distribution of the nevi and the signs indicating an extensive abiotrophy or a gliosis of the central nervous system, that the malforming factor must have become operative before the ectoblast had reached any considerable degree of differentiation. Skeletal anomalies such as the patient presented were reported by Goodhart as occurring in von Recklinghausen's neurofibromatosis. Brooks and Lehman cited scoliosis as being among the characteristic changes in the bone in von Recklinghausen's disease. Whether the scaphocephaly, dactylomegaly, syndactylism and scoliosis noted in the patient are analogous changes must remain conjecture, but it is possible that a malforming factor becoming operative early in the stage of embryogenesis might result in skeletal anomalies. The possibility that lowered mentality in the patient may be the result of Bourneville's tuberous sclerosis involving the cortex of the frontal lobe must await confirmation at necropsy. Under the classification of Yakovlev and Guthrie the neurocutaneous syndrome, or the "congenital ectodermoses" as they term them, may be divided into (1) von Recklinghausen's neurofibromatosis, (2) Bourneville's tuberous sclerosis and (3) the encephalotrigeminal vascular syndrome (angiomatosis of the brain associated with cutaneous nevi in the area of trigeminal distribution).

Archives of Ophthalmology, Chicago

12: 157-306 (Aug.) 1934

Divergence Excess. A. Bielschowsky, Breslau, Germany.—p. 157.
Swelling of Nerve Heads with Arachnoiditis and Unusual Changes in Visual Fields. E. B. Spaeth, Philadelphia.—p. 167.
Ophthalmomyiasis Subretinalis. M. C. Ennema, Amsterdam, the Netherlands.—p. 180.
Acquired Cysts of the Sclera. M. N. Beigelman, Los Angeles.—p. 188.
*Tumor of Orbit in a Case of Osteochondrofibrosarcomatosis. I. Goldstein and D. Wexler, New York.—p. 201.
Visual Field Defects in Pregnancy. C. E. Finlay, Havana, Cuba.—p. 207.
Some Principles of Plastic Surgery of Eyelid, with Especial Reference to the Hungarian School. D. Katz, Chicago.—p. 220.
Use of Fundus Colorimeter. L. L. Mayer, Chicago.—p. 228.

Tumor of Orbit in Osteochondrofibrosarcomatosis.—Goldstein and Wexler report a case of sarcoma in an orbital bone in the presence of a similar growth in other parts of the body, which differs from the few reported instances of metastatic orbital sarcomas in that it is not possible to point with accuracy to the primary source of the new growth. Except for the invasion of adjacent muscle tissues by the tumor, the growth was confined to separate skeletal bones. Although the first symptoms pointed to a primary growth in the dorsal spine, the possibility of a more or less simultaneous involvement of the bones concerned, i. e., multiple sarcomatosis, could not be ruled out with certainty. Such a diagnosis was supported by the embryonic character of the cellular and fibrous tissues in all the masses studied and by the presence of immature cartilage and bone. It appears that undifferentiated tissues in these various areas received suddenly a stimulus to grow and assumed the proportions of malignant tumors.

Journal of Lab. and Clinical Medicine, St. Louis

19: 1151-1256 (Aug.) 1934

Glutathione Content of Blood in Chronic Arthritis and Rheumatoid Conditions. B. D. Senturia, St. Louis.—p. 1151.
*Pneumococcus Chain Formation: Its Relation to Virulence in Mice, Occurrence and Distribution by Pneumococcus Types in Human Respiratory Infections, and Its Relation to Prognosis in Lobar Pneumonia. J. G. M. Bullowa and Clare Wilcox, New York.—p. 1156.
Observations on Oxygen Therapy. L. N. Katz, Chicago.—p. 1164.
*Dietary Treatment of Undernutrition: II. Effect of Gain in Weight on Carbohydrate Tolerance. M. S. Brown and Elaine P. Ralli, New York.—p. 1169.
Gaging Dose of Insulin. B. Y. Glassberg, St. Louis.—p. 1173.
Sodium Taurocholate and Virulence of Human Tubercle Bacilli. H. J. Corper, M. L. Cohn and Vyola J. Hoper, Denver.—p. 1179.
VII. Autonomic Imbalance in Animals. J. B. Wolffe, Philadelphia.—p. 1184.
Intravenous Lethal Doses of Amytal in Dog and Rabbit and Table of Animal Dosages Compiled from Literature. H. G. O. Holck and M. A. Kanân, collaboration by H. Homma, Beirut, Lebanon, Syria.—p. 1191.
Velocity Factor in Blood Transfusion. T. K. Rathmell and W. J. Crocker, Philadelphia.—p. 1206.
Value of Monkey for Study of Laxative Activity of Phenolphthalein, Especially in Comparing Different Samples of Drug. E. F. Williams Jr., E. W. Abramowitz and J. A. Killian, New York.—p. 1213.
Fungicidal Power of Phenol Derivatives: I. Effect of Introducing Alkyl Groups and Halogens. G. J. Woodward, Milton, Ore.; L. B. Kingery, Portland, Ore., and R. J. Williams.—p. 1216.
Observations on Technic of Friedman Test for Pregnancy. A. M. Young, Cleveland.—p. 1224.
Improved Electrode for Measurement of Potentials on Human Body. T. W. Forbes, New York.—p. 1234.
Simplified Psychodometer. R. H. Cheney, Brooklyn.—p. 1238.
*Modification of Hill's Radiopaque Mass for Injection of Lumens. E. J. Poth, San Francisco.—p. 1241.

Pneumococcus Chain Formation.—Bullowa and Wilcox describe the phenomenon of chain formation in pneumococci and its association with "rough" colonies and lowered virulence for mice. The occurrence of chainwise growth of pneumococci in severely ill patients suggests the possibility that the infection may be due to some other organism, either a streptococcus or a pneumococcus of another type. Chainwise appearance occurring in pneumococci recovered from the blood should not be a deterrent to the use of available specific serum, as the appearance of chain formation may be due to a partial protection in the blood. This protection may become exhausted. The cases for the most part appear to be less severe than pneumonias due to pneumococci that do not form chains.

Dietary Treatment of Undernutrition.—The use of insulin to increase the weight of persons who are underweight seems to Brown and Ralli to be unnecessary, except for the occasional patient who lacks the appetite to eat a high calory diet. Aside from the inconvenience there is the possibility of hypoglycemia, hyperglycemia and glycosuria. The ability of a person to gain weight depends on his taking in more energy than he puts out. That this can be accomplished by means of a high calory diet the authors show by a group of six subjects and a group reported previously. The chief effect of insulin in undernutrition is its ability to stimulate the appetite. This makes it easier for the patient to eat a large amount of food. The gain in weight is due to the increased caloric intake. If the patient does not eat, insulin will not increase the weight. The authors had under treatment a patient 23 years of age to whom insulin was given three times daily before meals, 10 units before breakfast, 15 before lunch and 15 before supper. The patient had hypoglycemic reactions almost daily, but an increased appetite was not experienced. She refused to eat the entire diet and during a period of three weeks gained exactly 4 pounds (1.7 Kg.). When one considers that an impaired tolerance for carbohydrate may follow the use of insulin in nondiabetic persons and since a satisfactory gain of weight will follow the ingestion of a high calory diet, it seems that the indiscriminate use of insulin in undernutrition is inadvisable.

Modification of Radiopaque Mass for Injection of Lumens.—Poth believes that bismuth oxychloride makes a satisfactory substance for injection of lumens, not only because of the high atomic number of bismuth and its consequent opacity

to x-radiation but also because of the physical properties of the compound. The bismuth oxychloride used is extremely finely ground and will assume definite physical properties when suspended and ground in acacia solutions. After such a suspension has been ground for some hours in a jar mill, the particles arrange themselves in chains less than half a micron thick and from 3 to 4 microns long. On standing for fifteen minutes the chains arrange themselves into spherical rosets about 8 microns in diameter. No larger particles are formed regardless of the density of the suspension, except on long standing. The greatest density of any mass suggested by Hill contains 0.4 Gm. of bismuth oxychloride per cubic centimeter and, as he states, this is a paste. By the method of preparation that the author presents, the most satisfactory mass for arterial injection contains 0.5 Gm. per cubic centimeter and has the consistency of a thin cream. Injection of this material at a pressure equal to the normal blood pressure of the animal usually gives satisfactory visualization of the arterial tree, extending out to minute arterioles without the fogging attendant on capillary shadows. In the preparation of the mass, the proportion of acacia to bismuth oxychloride taken is 1:2. The quantity of water varies with the density of suspension desired. The unmixed ingredients are placed in a glass fruit jar or ball mill crock one-third filled with ordinary glass marbles. This is placed on a ball mill, such as is commonly used by chemists for grinding materials extremely fine, and is allowed to grind for from two to three days. These suspensions are still unstable and will settle out appreciably after standing several days, and so it is advisable to regrind for an hour or two before making injections.

Journal of Pediatrics, St. Louis

5: 139-290 (Aug.) 1934

*Reduction of Premature Infant Mortality Through Estimation of Fetal Weight in Utero and Results of Analysis of Influence of Various Obstetric Factors on Viability of Nine Hundred and Fifty-Eight Premature Infants. S. H. Clifford, Boston.—p. 139.

*Occurrence of Streptococcus Hemolyticus in Throats of Children in Hospital Wards. L. B. Burgin and H. L. Higgins, Boston.—p. 156.

Gonad-Stimulating Hormones from Pituitary and from Human Urine. P. E. Smith and E. T. Engle, New York.—p. 163.

Osteomyelitis Among Children. S. Amberg and R. K. Ghormley, Rochester, Minn.—p. 177.

Standards of Physical Development for Reference in Clinical Appraisement: Suggestions for Their Presentation and Use. H. C. Stuart, Boston.—p. 194.

The Pediatrician and the Rural Child Health Program. J. H. M. Knox Jr., Baltimore.—p. 210.

Reduction of Premature Infant Mortality.—Clifford suggests that the premature infant mortality may be reduced through knowledge as to the probable weight of the fetus in utero and as the result of an analysis of the influence of various obstetric factors on the viability of premature infants. From a study of 958 premature infants the author concludes that: 1. The viability of the fetus does not appear to be influenced directly by the complication of pregnancy present in the mother. However, it is affected indirectly by what that complication does to the placental circulation and by the method selected for the treatment of that complication. 2. The future of the premature infant is tremendously affected by the method chosen for its delivery; in general, delivery by the present technic of cesarean section or breech extraction is accompanied by a much higher infant mortality than is vertex delivery assisted by the application of low forceps. 3. The premature infant mortality is greatly increased by the maternal administration of morphine within four hours of delivery. The author feels that the practical application of these factors during the past year has contributed to the following results: 1. The general stillbirth rate was reduced from a ten-year level of 69 per thousand deliveries to 47 per thousand for 1933. 2. The incidence of premature infants alive at birth increased from an average of 27.6 for the preceding ten years to 34.7 per thousand deliveries for 1933. 3. The number of premature infants weighing from 4 to 5 pounds (1.8 to 2.3 Kg.) increased from an average of 52 per cent for the preceding ten years to 61 per cent for 1933. 4. The premature infant gross mortality dropped for the first time in five years from a level at 35 per cent to 29 per cent. The mortality rate for infants weighing from 3 to 4 pounds (1.4 to 1.8 Kg.) was reduced from 40 per cent for the preceding ten years to 24 per cent for 1933.

Streptococcus Hemolyticus in Throats of Children in Hospital Wards.—Burgin and Higgins observed that there is considerable variation in the incidence of Streptococcus hemolyticus carriers in the ward of a hospital from week to week during the fall and winter season. There appears to be a monthly peak in the incidence of carriers. In these observations, two peaks of greater magnitude than the others occurred in November and March. This may be an indication of an epidemic respiratory infection in the whole community at that time. Members of the nursing staff tend to become carriers at the "peak" periods. The incidence of carriers among 178 children was 43.8 per cent and was about as common in a room of noninfectious eye cases as in rooms with many operative mastoiditis cases. The carrier rate among patients with tonsils was higher than among those without tonsils. There is no characteristic appearance of the carrier's throat that makes diagnosis possible without culture.

Journal of Thoracic Surgery, St. Louis

3: 553-670 (Aug.) 1934

Development of Lobectomy and Pneumectomy in Man. G. J. Heuer, New York.—p. 560.

*Effect of Sudden Occlusion of Either Primary Branch of Pulmonary Artery on Cardiac Output and Pulmonary Expansion. R. L. Moore, G. H. Humphreys and H. W. Cochran, New York.—p. 573.

Surgical Treatment in Fourteen Cases of Mediastinal or Intrathoracic Perineurial Fibroblastoma. S. W. Harrington, Rochester, Minn.—p. 590.

Pleural and Pulmonary Lesions Resulting from Intrapleural Injection into Rabbits of Mycobacterium Tuberculosis. W. S. Lemon and L. G. Montgomery, Rochester, Minn.—p. 612.

*Chemical Destruction of Periosteum in Treatment of Chronic Empyema. A. Jachia, Turin, Italy.—p. 623.

*Treatment of Pulmonary Tuberculosis by Bronchial Occlusion: Experimental Study. W. E. Adams and A. J. Vorwald, Chicago.—p. 633.

Effect of Sudden Occlusion of Pulmonary Artery on Cardiac Output.—Moore and his co-workers observed that the total circulation can be shunted through either lung in anesthetized dogs without any significant change in cardiac output. The decrease in cardiac output that has been observed after complete occlusion of one primary bronchus is not due to resistance to the passage of blood through the atelectatic lung. The expansion of a lung is affected by its pulmonary circulation, decreasing when the pulmonary circulation is interrupted and increasing when the pulmonary circulation is increased.

Chemical Destruction of Periosteum in Treatment of Chronic Empyema.—On the basis of his experiences in fifty cases of severe fistulous postpneumothoracic empyema, Jachia concludes that the Schede method is too complicated and severe, so that it cannot be used for all patients. In the cases in which recovery is obtained, the result is secured only at the cost of numerous interventions with long residence in hospitals. The thoracic resection of Schede is really adapted for the treatment of empyemas occupying only a part of the hemithorax. The Estlander procedure, however, allows the operator to stay away from the infected pleura and is in itself a less severe operation and surgically more nearly correct because it involves only zones that are not infected. But the Estlander method, when used for tuberculous patients, does not always give the desired result. The use of Zenker's solution prevents the new formation of bone; being inoffensive, it does not disturb the regular cicatrization of the operative wound, and it facilitates appreciably the radical therapy of chronic empyemas.

Treatment of Pulmonary Tuberculosis by Bronchial Occlusion.—According to Adams and Vorwald, atelectasis of pulmonary tissue brought about by bronchial occlusion exerted a favorable influence on experimental pulmonary tuberculosis in dogs, whether induced by hematogenous or bronchogenic infection or by direct inoculation. Tubercles in the collapsed lobes were in general small and almost free from bacilli, whereas in inflated lobes in the same animals they tended to be large, often confluent, caseous, and rich in acid-fast bacilli. The favorable effect in the collapsed lobes increased with the duration of the collapse and in some cases amounted to a complete cure of the disease. This beneficial influence may be attributed to several factors: absolute rest, decrease in oxygen and increase in carbon dioxide. Tuberculous lesions were produced with routine regularity either by hematogenous or bronchial infection or by direct inoculation, and the influence of

collapse on these lesions could be extremely well evaluated. Little difficulty was encountered in producing complete stenosis of a bronchus not discharging pus. When a discharge was present, repeated applications of the cautery were necessary to effect complete occlusion. Bronchi closed in man as readily as in dogs. Little or no reaction attended the application of the cauterizing agent in human cases.

Medical Annals of District of Columbia, Washington

3: 211-232 (Aug.) 1934

Neurosyphilis from the Standpoint of the Ophthalmologist. G. V. Simpson, Washington.—p. 211.

Neurosyphilis from the Standpoint of the Otologist. V. R. Alfaro, Washington.—p. 215.

Treatment of Neurosyphilis. T. C. C. Fong, Washington.—p. 217.

New Treatment for Prostatic Calculi: Report of Case in Young Man with Removal by Means of Resectoscope. N. Belt, Washington. —p. 222.

Michigan State M. Society Journal, Grand Rapids

33: 409-478 (Aug.) 1934.

Acute Perforated Peptic Ulcer: Summary of Two Hundred and Eleven Cases of Acute Perforated Gastric and Duodenal Ulcers. H. K. Shawan, Detroit.—p. 434.

Periarteritis Nodosa: Case Reports. I. J. Hauser, Ann Arbor.—p. 440.

Conservative Treatment of Placenta Praevia. W. F. Seeley, Detroit. —p. 445.

Present Status of Endocrine Diagnosis. R. L. Schaefer, Detroit.—p. 449.

Nocturnal Enuresis. A. H. Steele, Northville.—p. 455.

Treatment of Primary Dysmenorrhea. L. E. Bauer, Detroit.—p. 459.

Autonomic Nervous System in Its Relation to the Ophthalmologist and the Otolaryngologist. W. E. McGarvey, Jackson.—p. 462.

Surgical Judgment. C. D. Brooks, Detroit.—p. 465.

Oblique Fracture Through Head of Femur with Posterior and Upward Dislocation of Shaft: Its Treatment by Closed Method: Case Report. F. MacKenzie, Detroit.—p. 469.

Military Surgeon, Washington, D. C.

75: 57-112 (Aug.) 1934

Relation of Iodine to Effectiveness of Endocrine Extracts. F. E. Chidester.—p. 57.

Treatment of Diabetes Mellitus. J. R. Darnall.—p. 68.

Perforation of Intestines by Foreign Bodies. B. S. McClintic.—p. 75.

Automatic Flushing Latrine. R. Berman.—p. 79.

New England Journal of Medicine, Boston

211: 237-288 (Aug. 9) 1934

Symptoms as Measurement of Tuberculous Activity. H. S. Wagner, Pocasset, Mass.—p. 237.

Physical Signs as Measure of Activity in Pulmonary Tuberculosis. F. H. Hunt, Mattapan, Mass.—p. 239.

X-Ray in Measurement of Activity in Pulmonary Tuberculosis. O. S. Pettingill, Middleton, Mass.—p. 240.

Analysis of Quantitative Tuberculin Test as Index of Tuberculous Activity. T. L. Badger and W. K. Myers, Boston.—p. 241.

Leukocytic Picture as Aid in Measurement of Activity in Pulmonary Tuberculosis. J. Kaminsky, Waltham, Mass.—p. 245.

*Monocyte-Lymphocyte Ratio as Measurement of Activity in Pulmonary Tuberculosis. Gulli Lindh Muller, with technical assistance of Doris L. Davidson, Rutland, Mass.—p. 248.

Schilling Differential Count and Red Cell Sedimentation Rate as Measurement of Activity in Pulmonary Tuberculosis. J. W. Cass Jr., with technical assistance of Margaret Sutermeister, Boston.—p. 252.

Discussion and Summary of the Whole Problem, with Especial Reference to the Study of the Leukocyte Count in Pulmonary Tuberculosis. W. H. Ordway, Mount McGregor, N. Y.—p. 260.

Phenobarbital Poisoning. B. P. Haubrich, Claremont, N. H.—p. 264.

Bone Tumors: Report of Two Cases of Benign Giant Cell Tumors. H. L. Taylor, Portsmouth, N. H.—p. 267.

Obstetrics in General Practice: Review of One Thousand Cases. B. F. Macchia, Boston.—p. 273.

Monocyte-Lymphocyte Ratio as Measurement of Activity in Pulmonary Tuberculosis.—To determine whether the monocyte-lymphocyte ratio is of any practical aid in evaluating activity in pulmonary tuberculosis, Muller analyzed the blood counts of 800 consecutive admissions at the Rutland State Sanatorium. The counts were all made by one person on fixed coverslip smears, according to standard procedures. Among the 800 admissions there were 730 cases of pulmonary tuberculosis, thirteen cases of childhood type and, as a rule, inactive tuberculosis, seven cases of pleurisy with effusion and fifty nontuberculous cases. The monocyte-lymphocyte ratio of the 730 patients has been correlated with various factors: the stage of the disease, prognosis, temperature and pulse during the first week after admission, and the results obtained during the time of observation. In the group classified as minimal tuberculosis, or stage I, the greatest number of cases showed a normal or nearly normal ratio, and no patient was classified as having minimal tuberculosis with a ratio of more than 0.9. The cases classified as stage II, or moderately advanced, show the same trend as those of stage I, while the proportion of far advanced cases, or stage III, gradually increased with the ratio to a total of 94 per cent when this ratio reached 1.25 or more. Comparing clinical judgment with the objective observation of the monocyte-lymphocyte ratio, there was a surprisingly close correlation between these factors. The number of patients given a favorable prognosis decreased as the ratio increased and vice versa. During the first week in the sanatorium 18.9 per cent of the patients had elevated temperature and 51.3 per cent increased pulse rate in the group with normal monocyte-lymphocyte ratio. The proportion of patients having an elevated temperature and pulse rate above normal increased progressively with the ratio but did not reach 100 per cent in any one group. In the group of 111 patients having a normal monocyte-lymphocyte ratio, 88.2 per cent improved. As the percentage of improving cases decreased, the monocyte-lymphocyte ratio increased. It also increased proportionally to the increasing number of unimproved or fatal cases. That some patients having tuberculosis will have a normal monocyte-lymphocyte ratio is illustrated. In the group of patients giving a monocyte-lymphocyte ratio of 1 or more, sixteen improved. In the presence of a high ratio a favorable prognosis is not always justifiable, although, from the results obtained, a high ratio must be considered with grave concern. A high ratio may be accounted for by various factors, the nature of which must be carefully studied in order to avoid misleading interpretation. Into this category enters an acute onset with a cold, bronchopneumonia, pneumonia or pleurisy. Successful active therapy may also bring about a rapid change in the monocyte-lymphocyte ratio. However, 25 per cent of the patients with a ratio of more than 1 died within three months. All stages of activity were represented between the groups with normal and high ratios.

Northwest Medicine, Seattle

33: 263-300 (Aug.) 1934

Functional Uterine Hemorrhage, with Especial Reference to Hyperplasia Endometrii and Relation to Menstruation: Consideration of Its Etiology, Treatment. K. H. Martzloff, Portland, Ore.—p. 263.

*Pruritus Vulvae, Chronic Vulvitis and Leukoplakic Vulvitis (Kraurosis Vulvae): Treatment by Alcohol Injection. W. M. Wilson, Portland, Ore.—p. 268.

Value of Sympathectomy in Treatment of Hirschsprung's Disease, Cord Bladder and Dysmenorrhea. A. W. Adson, Rochester, Minn.—p. 276.

Relationship Between Trauma and Disease: Compensation Problem. R. C. Schaeffer, Tacoma, Wash.—p. 278.

Responsibility of State and Local Government in Matters of Health. P. W. Covington, Salt Lake City.—p. 282.

New Anal Retractor. G. R. Marshall, Seattle.—p. 284.

Unreliability of Single Vaccination of Dogs Against Rabies. K. Winslow, Seattle.—p. 284.

Melanoma (Melanotic Sarcoma): New and Original Treatment. W. C. Speidel, Seattle.—p. 285.

Treatment of Pruritus Vulvae by Alcohol Injection.—Wilson applied the alcohol injection method of Stone for the treatment of pruritus ani in five cases of pruritus vulvae, four cases of pruritus vulvae with chronic vulvitis, one case of pruritus vulvae with chronic hypertrophic ulcerative vulvitis, and five cases of pruritus vulvae with leukoplakic vulvitis. The vulva is as carefully prepared as it would be for surgery. The patient is then anesthetized, general anesthesia or intradermal infiltration (procaine 2 per cent) being used. The alcohol is injected with a 2 cc. hypodermic syringe calibrated in minims. The needle is inserted perpendicular to and through the skin so that the alcohol will be deposited just beneath the dermis. Only 3 or 4 minims (0.2 or 0.26 cc.) of 95 per cent alcohol is injected at a single insertion of the needle. The number of injections for any one structure or area depends on the extent of the itching, the age of the patient and the condition of the peripheral circulation as well as the estimated efficiency of the circulation of the part to be injected. When the skin is in fair condition and the circulation seems unimpaired, one may inject as much as 4 minims of alcohol into every square centimeter of the itching areas. When the skin is much thickened or excoriated or the circulation is impaired, the injections must be made at wider intervals and only 2 or

3 minims (0.13 or 0.2 cc.) is injected at one insertion of the needle. Skin lesions of the vulva, including excoriations, cracks, fissures, dermatitis, folliculitis and furunculosis, heal promptly and disappear in from three to ten days. The grayish discoloration of the skin gradually disappears, so that the color of the skin approaches normal in from six to eight weeks after injection. In every case in which the skin was indurated or thickened and had lost much of its elasticity, injections of alcohol effected an immediate softening and a partial or complete return of its elasticity. The rigidity and stenosis of the vaginal introitus observed in two cases of leukoplakic vulvitis were markedly relieved. In the five cases of leukoplakic vulvitis, the appearance of the vulva changed rapidly following injection. Most of the visible leukoplakia disappeared in from ten to twenty days. Although pruritus, requiring further treatment, has recurred in three of these cases, only a few patches of leukoplakia have been observed.

Public Health Reports, Washington, D. C.

49: 869-904 (July 27) 1934

Five Years' Experience with Trichinosis in New York City. S. Frant. —p. 869.

49: 905-930 (Aug. 3) 1934

Studies in Chemotherapy: I. Action of Sodium Formaldehyde Sulphoxylate in Bacterial Infections. S. M. Rosenthal.—p. 908.
Heart Disease Among Seamen. H. Arenberg.—p. 912.

49: 931-958 (Aug. 10) 1934

Effect on the Eye of the Yellow Light of the Sodium Vapor Lamp. J. E. Ives.—p. 931.
Prevention of Postoperative Wound Infections. E. H. Carnes.—p. 939.

Radiology, Syracuse, N. Y.

23: 131-260 (Aug.) 1934

Research Trail of the X-Ray. A. W. Crane, Kalamazoo, Mich.—p. 131.
Ulcerations of Stomach and Small Intestine Following Roentgen Therapy: Report of Fatal Case, with Perforation. A. R. Elliott and E. L. Jenkinson, Chicago.—p. 149.
Results of Postoperative X-Ray Therapy in Carcinoma of the Ovary: Series of Twenty-Two Cases. J. B. Montgomery and J. T. Farrell Jr., Philadelphia.—p. 157.
Radiology and the Radiologist. E. H. Skinner, Kansas City, Mo.—p. 163.
Total Dose Versus the Cumulative Dose in Radiation Therapy. M. C. Reinhard and H. L. Goltz, Buffalo.—p. 166.
*Technic of Treatment of Cancer of Cervix with Radon. F. E. Simpson, Chicago.—p. 170.
Roentgen Examination of the Chest of Five Hundred New-Born Infants for Pathology Other Than Enlarged Thymus. L. Solis-Cohen and S. Bruck, Philadelphia.—p. 173.
Pellegrini-Stieda's Disease: Clinical and Roentgenologic Consideration. D. W. Hedrick and H. C. Jones, Detroit.—p. 180.
Lobite Tuberculosis. E. M. Van Buskirk, Fort Wayne, Ind.—p. 189.
Scattered Radiation in Roentgenography of the Chest: Preliminary Report. R. B. Wilsey, Rochester, N. Y.—p. 198.
Value of Breast Radiography. I. H. Lockwood, Kansas City, Mo.—p. 202.
Further Observations on Roentgen Examination of the Aorta. D. S. Dann, Kansas City, Mo.—p. 208.
Opaque Mediums in Urology, with Especial Reference to a New Compound, Sodium Ortho-Iodohippurate. L. Jaches and M. Swick, New York.—p. 216.
Bullous Emphysema (?) or Bilateral Pneumothorax (?). E. Korol, Lincoln, Neb., and C. F. Ensign, Hines, Ill.—p. 223.

Treatment of Cancer of Cervix with Radon.—Simpson is of the opinion that it is unnecessary to give preliminary douches or other treatment under a mistaken notion that one can "clean up" the field. Dilation of the cancerous cervix should never be practiced. The author is opposed to making a trough for the insertion of radium tubes or to any sort of partial operation on the cervix when there is a certainty or even a suggestion of cancer. His method of attack is by surface irradiations against the cervix and lateral fornices and within the uterine canal with a large quantity of radon for a minimum of time. He believes the best results are obtained by using, as far as possible, the "selective" rather than a too "caustic" method. "Burns" should be sedulously avoided. The cervix is exposed carefully with a long bivalve speculum. A gold plate, 4 mm. thick, is then applied to the inside of the posterior blade of the speculum relatively to protect the rectum. An applicator containing approximately 1,000 millicurie hours of radon is grasped with an 8-inch rat-toothed forceps and placed carefully against the cervix or in one lateral fornix. The radon applicator should be large enough to cover the entire growth. The speculum is filled with gauze packing and the speculum and forceps carrying the radon are left in the vagina during the entire irradiation, which may last only fifteen or twenty minutes. One strip of a T binder dependent from the patient's shoulders holds the speculum and a second strip holds the forceps carrying the radon firmly but gently in position. In a few days a second irradiation is given against the cervix or in the other lateral fornix. These irradiations are continued until the estimated dose has been given. When the cervix becomes patulous, a flexible lead tube 4 mm. in diameter containing the radon is introduced into the entire uterine canal, without anesthesia and without pulling down or dilating the cervix. A tube 7 cm. long and containing 600 millicurie hours of radon may be left in the uterus for four hours, but this should be regarded as a maximal dose. The total dosage against the cervix and in the lateral fornices should not ordinarily exceed 3,000 millicurie hours. The entire local irradiation may be carried out in about three weeks. The pelvic girdle may be irradiated in the usual way. If cancer cells have migrated to the deeper parts of the pelvis beyond the effective field of local irradiation, all types of so-called high voltage roentgen therapy are only palliative, as a rule. Patients too far advanced for strong "curative" measures should receive only palliative irradiation, as nothing is gained and much harm may be done by severely injuring normal tissues.

Rhode Island Medical Journal, Providence

17: 125-142 (Aug.) 1934

Medical and Surgical Causes for Mental Disease. H. E. Kiene, Providence.—p. 125.
Cancer of the Mouth. P. P. Chase, Providence.—p. 130.
Pneumothorax and Phrenicectomy in Treatment of Pulmonary Tuberculosis. J. M. Beardsley, Providence.—p. 135.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

42: 435-496 (Aug.) 1934

Blood Iodine in Thyroid Disease. G. M. Curtis, Versa V. Cole and F. J. Phillips, Columbus, Ohio.—p. 435.
Use of Iodine in Recurrent Exophthalmic Goiter. S. F. Haines, Rochester, Minn.—p. 449.
Hyperthyroidism in the Negro: Analysis of Seventy-Three Cases. U. Maes, F. F. Boyce and Elizabeth M. McFetridge, New Orleans.—p. 456.
Thyroid Crisis. H. K. Ransom and R. H. Bayley, Ann Arbor, Mich. —p. 464.
*Studies of Blood Oxygen in Exophthalmic Goiter: Preliminary Report. E. H. Rynearson, B. T. Horton and J. deJ. Pemberton, Rochester, Minn.—p. 476.

Blood Oxygen in Exophthalmic Goiter.—In determining the blood oxygen, Rynearson and his associates selected subjects with exophthalmic goiter who had had no previous treatment with compound solution of iodine. Blood was removed, under oil, from the right and left external jugular veins and from the basilic vein, and the oxygen content was determined by the van Slyke gasometric method. The oxygen saturation was determined by dividing the oxygen content by the oxygen capacity. Compound solution of iodine, 30 minims (2 cc.) daily, was administered to each subject after the foregoing study was made and this treatment was continued until the time of thyroidectomy. At the time of operation the thyroid veins contained a high admixture of arterial blood. The average oxygen saturation of blood from the thyroid vein at operation was found to be approximately 90 per cent, whereas the average oxygen saturation of blood from the thyroid artery was approximately 93 per cent. The authors explain the observation of such a high admixture of arterial blood in the thyroid vein by the fact that "physiologic arteriovenous fistulas" must exist between the thyroid arteries and thyroid veins of subjects who have exophthalmic goiter, a condition that had previously been suspected but heretofore not demonstrated. This indicates that the blood from the thyroid arteries passes through the thyroid practically unaltered from the standpoint of oxygen content, that the capillary bed in the thyroid is wide open, and that the blood passes from the arterial to the venous system so rapidly that little oxygen is removed from the arterial blood. Before operation the oxygen saturation of the blood from the jugular veins and from the basilic vein of subjects who had exophthalmic goiter was essentially normal. The use of anesthesia did not increase the oxygen content of the blood in these veins, and it seems reasonable to believe that its use did not increase the oxygen content in the thyroid veins.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

British Journal of Ophthalmology, London

18: 433-496 (Aug.) 1934

*Viscous Elastic Properties of Vitreous Body and Its Reaction to External Forces. S. Duke-Elder and E. B. Robertson.—p. 433.
Gas Poisoning with Unusual Ophthalmologic Complications: Case. H. Grimsdale.—p. 443.
Classification of Cases of Concomitant Strabismus Based on Etiologic Factor. M. A. Pugh.—p. 446.
"White Rings" in the Cornea. H. B. Stallard.—p. 452.
Angiomatosis Retinae: Case. W. Niccol and R. F. Moore.—p. 454.
Agranulocytic Anemia Following Herpes Ophthalmicus: Case Report. Ida Mann and Doris Baker.—p. 458.
Spanish-Arabic Ophthalmology. A. F. MacCallan.—p. 460.
Focal Infection in Diseases of the Eye: I. Report of Certain Laboratory Examinations. C. Berens, P. T. Connolly and G. H. Chapman.—p. 463.
Anophthalmos: Unpublished Manuscript by James Briggs Giving the First Account of the Familial Occurrence of the Condition. A. Sorsby.—p. 469.

Elastic Properties of Vitreous Body.—Duke-Elder and Robertson devised a technic that appears to meet the exacting conditions required to obtain measurements of the response of the vitreous body to external forces and of its viscous elastic properties. This has shown that the vitreous body possesses viscous elastic properties of the same nature as dilute plasma clots. Acidification causes the gel to behave more like an ordinary elastic solid. The results indicate that the vitreous humor is a gel composed of a meshwork of elastic fibrils suspended in a viscous liquid, a view that is borne out by ultramicroscopic examination and has previously been elaborated fully. The authors believe that their technic could form a method for the exact study of the physical state of the vitreous gel in different pathologic conditions, providing as it does an index of the consistency of the gel and its shrinkage or turgescence owing to the withdrawal or addition of water of adsorption to the colloid micelle. The state of a slightly acidified vitreous corresponds to that of an early degeneration and breakdown of the gel structure. Such a condition is seen in many cases of retinal detachment.

British Journal of Physical Medicine, London

9: 53-74 (Aug.) 1934

Ocular Diseases and Disabilities of Old Age. F. W. Law.—p. 55.
Dental Disease in Old Age. F. Talbot.—p. 56.
Diet in Old Age. R. Hutchison.—p. 59.
Early Prostatic Obstruction: Its Symptoms, Investigation and Treatment. J. C. Ainsworth-Davis.—p. 60.
Neuritis, Sciatica and Lumbago in Old Age. W. Yeoman.—p. 63.
Treatment and Preventive Treatment of Cardiovascular Disease in Old Age. W. W. MacNaught.—p. 66.
Biophysical Treatment in Some Nervous Disorders. F. H. Humphris.—p. 69.

British Medical Journal, London

2: 193-240 (Aug. 4) 1934.

Are We Satisfied with the Results of Antenatal Care? J. S. Fairbairn.—p. 193.
Id. F. J. Browne.—p. 194.
Id. Ethel Cassie.—p. 197.
Id. G. F. Buchan.—p. 199.
Pharmacology and Therapeutics of Sodium Evipan, with Especial Reference to Abnormalities Under Evipan Anesthesia. G. Slot and A. H. Galley.—p. 201.
*Injection Treatment of Complete Rectal Prolapse: Report of Two Cases. A. S. Morley.—p. 204.
Addison's Disease Due to Malignant Involvement of the Solar Plexus. F. Bicknell.—p. 206.

Injection Treatment of Rectal Prolapse. — Morley describes two cases of complete prolapse of the whole rectal wall that he has treated by means of injection and he urges that a conscientious trial of this method be made by other rectal surgeons before submitting patients to one of the ordinary operations for rectal prolapse. All operations for rectal prolapse are severe, and all are liable to failure. One of the advantages of treatment by injection is that it does not necessitate any confinement to bed. In both of the author's cases there was definite prolapse not merely of internal hemorrhoids but of a considerable length of the whole rectum. Both had toneless sphincters with obliteration of the anal canal and both complained chiefly of incontinence of feces. The author does not suppose that complete relief will be permanent in either case. The technic differs slightly from the method of injection of internal hemorrhoids with phenol in almond oil in that for the high injection in true rectal prolapse one aims at inserting the needle slightly deeper than the submucous tissue. It should be introduced deeply enough to reach the muscular coat. If this is done successfully, the swelling produced by the oil in the submucous tissue does not appear to the same extent, and the "striation sign" that enough has been injected at any particular spot does not occur. One is reduced to guess at the correct amount. The author has usually injected from 2 to 3 cc. at each puncture. The aim is to inject all round the rectal wall. If one feels the rectum from the vagina after two or three treatments the whole intestine feels hard, and the sensation closely resembles that produced by an annular carcinoma of the rectum when felt from the vagina. All this thickening disappears three or four weeks after the completion of the treatment. This inflammatory process results in close adhesion of the mucous and submucous coats to each other and to the muscular coat. This in itself prevents the intestinal wall from prolapsing, and, moreover, the submucous space being more or less obliterated, the main hemorrhoid vessels that feed the piles are compressed and the hemorrhoids are cured in that way.

Indian Journal of Medical Research, Calcutta

22: 1-198 (July) 1934

Method of Incubating Ascaris Eggs. F. H. Stewart.—p. 1.
Biologic Assay of Digitalis by Frog Method: Describing Characteristic Curve for Rana Tigrina. B. B. Bhatia and S. Lal.—p. 3.
Improved Type of Apparatus for Perfusion of Mammalian Heart and Constant Temperature Bath for Isolated Organs. K. Venkatachalam, C. Vareed and A. N. Ratnagiriswaran.—p. 11.
Device for Filtering Bacteriophage. S. R. Pandit.—p. 17.
Structure and Significance of Hypophysioportal System. M. A. Basir and D. V. S. Reddy.—p. 21.
Nonglucose Reducing Bodies in Blood and Their Variation in Sugar Tolerance Tests, with Especial Reference to Cirrhosis of Liver. V. K. Narayana Menon and M. V. Radhakrishna Rao.—p. 29.
Use of Alkali Tartrates in Diabetes and Prolonged Fasting. N. R. Dhar and C. C. Palit.—p. 49.
Effect on Thyroid Cells in Vitro of "Goiter-Noxa" Associated with Certain Conditions of Insanitation. R. McCarrison and G. Sankaran.—p. 53.
Effect of Caging on Thyroid Gland of Albino Rats. R. McCarrison and B. G. Krishnan, statistical note by K. B. Madhava.—p. 59.
Lathyrism in Rat. R. McCarrison and B. G. Krishnan.—p. 65.
Effect of Plasma from Polyneuritic Fowls on Growth in Vitro of Embryo-Chick Intestine. R. McCarrison and G. Sankaran.—p. 67.
Attempts to Produce Uric Acid Calculi in Albino Rats. S. Ranganathan.—p. 71.
Plague Inquiry in Cumbum Valley, South India. P. V. George and W. J. Webster.—p. 77.
Further Observations on Indian Relapsing Fever: Part I. Types of Spirochetes Found in Experimental Infections. J. Cunningham, J. H. Theodore and A. G. L. Fraser.—p. 105.
Observations on Chemistry of Oxytocin: Oxytocic Hormone of Pituitary Gland: Part III. N. Das and B. C. Guha.—p. 157.
Influence of Adrenalin, Pituitary Extracts and Insulin on Movements of Intestine. B. T. Krishnan.—p. 161.
Preparation, Properties and Pharmacologic Action of Anhydrocotarnine Carbamide. B. B. Dey, P. L. Kantam, J. C. David and N. Rajamanikam.—p. 165
Studies on Protein Fractions of Blood Serums: Part I. Normal and Filarial Blood Serums. R. N. Chopra, S. N. Mukherjee and S. Sundar Rao.—p. 171.
*Anthelmintic Properties of Vernonia Anthelmintica Willd. (Syn. Serratula Anthelmintica). R. N. Chopra, N. N. Ghosh and A. K. Mukerji.—p. 183.

Anthelmintic Properties of Vernonia Anthelmintica.—Chopra and his associates tested the anthelmintic properties of the seeds of Vernonia anthelmintica. The powdered seeds in doses varying from one-half to 1 drachm (2 to 4 Gm.) expelled Ascaris in a number of cases, but their vermifugal action was not as certain as that of such drugs as santonin. Their action against Oxyuris vermicularis was more powerful, a large number of the worms being expelled after the administration of the seeds. The bitter substance in the seeds is the active anthelmintic principle; in twenty-five cases it proved effective in expelling Ascaris in one patient and Oxyuris in a large number of patients. The purified bitter substance was given at bedtime either alone or combined with from 3 to 5 grains (0.2 to 0.3 Gm.) of mild mercurous chloride, followed the next morning by a dose of magnesium sulphate. In eleven of fifteen cases in this series in which oxyuris infection was diagnosed, adult worms were passed with the combined treatment. In some cases the drug had to be repeated two or three times before all the worms were expelled. The drug is well tolerated generally. Vomiting was produced in only one case after its

administration on two occasions. The drug had no effect whatever on hookworms and tapeworms. Oxyuris is easily expelled by such purgative drugs as mild mercurous chloride and salts, but the number expelled when these were combined with Vernonia anthelmintica was considerably larger.

Journal of State Medicine, London

42: 435-496 (Aug.) 1934

Veterinary Medicine and Agriculture from a Farmer's Standpoint. Q. E. Gurney.—p. 435.
Bacterial Carriers. G. P. C. Claridge.—p. 438.
Serologic Observations from Cases of Cancer Under Treatment. E. C. Lowe.—p. 444.
Organization of Treatment of Motor Accidents. Maud Frances Forrester-Brown.—p. 462.
Hygiene of Refuse Disposal by Controlled Tipping. H. L. Oldershaw. —p. 480.
Welfare and Safety of Laundry and Other Hospital Workers. C. O. Stallybrass.—p. 491.

Lancet, London

2: 233-290 (Aug. 4) 1934

Some Observations on Industrial Dermatitis. Sibyl G. Horner.—p. 233.
Glandular Fever and Infectious Mononucleosis. H. L. Tidy.—p. 236.
*Basophil Adenoma of Pituitary Gland: Two Cases. Dorothy S. Russell, H. Evans and A. C. Crooke.—p. 240.
Some Points in the Treatment of Rheumatic Diseases. C. W. Buckley. —p. 246.
Bacillary Dysentery of the Newcastle Type. H. Whitehead, note on bacteriology by W. M. Scott.—p. 248.
*Treatment of Bronchial Asthma by Dorsal Perisympathetic Injection of Absolute Alcohol. G. L. L. Levin.—p. 249.
Secondary Carcinoma of the Myocardium. E. M. Ward.—p. 250.
Antihemolysin Titers in Chronic Rheumatic and Allied Diseases. G. J. Griffiths.—p. 251.
Explosive Eructation. T. East.—p. 252.

Basophil Adenoma of Pituitary Gland.—Russell and her associates describe two fatal cases in which a basophil adenoma of the pituitary gland was suspected at necropsy because of the physical appearance of the subjects and the presence of a conspicuous degree of cardiovascular hypertrophy. In the first case the possibility of a pituitary tumor had been considered at an early stage of the illness on account of the severe headache, obesity and impotence but was abandoned when the roentgen examination was negative. After that the case was regarded as one of essential hypertension. Finally, the observation of albuminuric retinitis suggested the presence of a malignant hypertension (nephritis repens), and this suspicion was later justified by the manner of death. Several of the principal clinical features of Cushing's syndrome could be identified: the obesity of peculiar distribution associated with abdominal striae, hypertension, plethora, skin hemorrhages and impaired sexual function. The obesity was, however, transitory. The skin hemorrhages were terminal and were doubtless due to the nephritis. Certain changes claimed as part of the syndrome were lacking — osteoporosis and skeletal deformities, glycosuria and hypertrichosis. In the second case repeated albuminuria of pregnancy was associated with raised blood pressure without nitrogen retention. Cardiovascular hypertrophy, obesity and a moderate degree of hypertrichosis were the only physical features suggesting pituitary adenoma. The obesity had been present for at least nineteen years. This and the general distribution of adipose tissue over the trunk and limbs are deviations from Cushing's syndrome in which the fat is acquired rapidly at a shorter period before death and spares the limbs. Abdominal striae were present but may have been due to the previous pregnancies. There was no amenorrhea. The patient did not complain of aches and pains. They believe that these two cases, considered in conjunction with those reported elsewhere, suggest that the correlation between basophil adenoma, obesity and persistent high blood pressure is close. They show that the correlation, if it exists, is between basophil adenoma and high blood pressure as such, and not between basophil adenoma and chronic Bright's disease.

Treatment of Asthma by Dorsal Perisympathetic Injection of Alcohol.—Levin injected absolute alcohol into the bronchial sympathetic nerves in the treatment of sixteen patients suffering from bronchial asthma, the majority of whom were thought to be so-called incurables. In ten cases there was complete relief after four to eight injections, in one case there was sufficient improvement after two injections for the patient to discontinue treatment, in three cases there was considerable improvement after two or three injections and in two cases the improvement was only slight. For the injection the patient is seated leaning forward, the hands resting on the knees, the spine is arched backward and the tips of the shoulders are drawn in so as to allow the maximal retraction of the scapulas. A point is selected 4 cm. away from the spine, preferably in the third, fourth, fifth or sixth intercostal spaces. A few drops of procaine hydrochloride is injected intradermally so as to raise a wheal; the needle carrying the absolute alcohol is introduced perpendicularly just above the space to be injected down to the inferior margin of the rib; as soon as the rib is felt the needle is directed slightly downward and 45 degrees forward and inward to the depth of about 2 cm. away from the lower margin of the rib. The point of the needle is now between the external and internal intercostal muscles. The needle is pushed slightly farther inward toward the spine and about 2.5 cc. of absolute alcohol is slowly injected, the position of the needle being altered slightly for each spurt. Usually a sharp pain is felt in two or three interspaces immediately below the site of injection. Two or three intercostal nerves can be dealt with at the same sitting. The only possible complication is injury to the pleura. The entry of the needle into the pleural cavity can be observed by the thick velvety feel of the pleura and by a hissing noise due to the entry of air; therefore it is preferable to introduce the needle alone without the syringe. In doubtful cases the needle should be connected with a manometer, and the presence or absence of respiratory excursions of mercury will show whether the needle is or is not in the pleural cavity.

Medical Journal of Australia, Sydney

2: 105-138 (July 28) 1934

Treatment of Emergencies in Cardiac Disease. M. C. Lidwill.—p. 108.
Cause of Death: Abstract of Five Hundred Consecutive Necropsies. J. V. Duhig.—p. 112.

Nourrisson, Paris

22: 209-272 (July) 1934

Conception of Lymphatism. A.-B. Marfan.—p. 209.
*Emesis of Early Infancy: Disappearance in Certain Positions. L. Ribadeau-Dumas and Mlle. Barnaud.—p. 226.
Physiopathology of Denutrition of Nursling. L. Garot.—p. 239.

Emesis of Early Infancy.—Ribadeau-Dumas and Barnaud report four cases of vomiting in infants, which disappeared when the infants were placed in certain positions. In the first case, serious vomiting and emaciation continued until the child was placed prone on the abdomen until the end of digestion. Vomiting reappeared when the infant was placed on the back again. The second case was complicated by a concurrent infection. The authors believe that the vomiting in the first two cases was due to compression of the third portion of the duodenum by the superior mesenteric artery. In the third case it appeared to be due to pressure on the stomach from a syphilitic hypertrophy of the liver and spleen. After mercury rubs the infant was able to eat in any position. In the final case lying on the left side caused a cessation of vomiting, and the authors believe that the cause of vomiting was poor gastric peristalsis.

Presse Médicale, Paris

42: 1065-1088 (July 4) 1934

*Treatment of Erythemia (Vaquez's Disease) with Phenylhydrazine. H. Vaquez and M. Mouquin.—p. 1065.
*Treatment of Tuberculous Hemoptysis by Subcutaneous Injections of Oxygen. A. Courcoux.—p. 1068.
Diagnosis of Hyperthyroidism by Electrical Test. P. Sainton and Lamy.—p. 1069.

Treatment of Erythremia.—Vaquez and Mouquin discuss the treatment of erythremia with phenylhydrazine. The principal objection to the use of phenylhydrazine, that of its toxic effects, they believe exaggerated and largely due to overdosage. The effects on the kidney, spleen and liver are almost always transitory. This was true at least in their own cases. Venous thrombosis is not rare in the course of erythremia and cannot be definitely assigned to the treatment. They have never observed it, but the two fatal cases analyzed by Giffin and Conner showed faulty technic. Treatment with phenylhydrazine

should have the double object of bringing the erythrocytes to a normal number and then maintaining them there. The dose required for these two purposes naturally differs. They introduce treatment by giving phenylhydrazine hydrochloride in a dose of from 0.05 to 0.1 Gm., depending on the weight of the patient and the degree of polycythemia. On the fourth day the blood is examined and if there is no change the dose is increased by 0.05 Gm. for another period of four days, when the procedure is repeated. It is wise, even with apparent therapeutic failure, to suspend medication after the patient has taken a total of 3 Gm. When the count has reached the desired level, they give from 0.1 to 0.2 Gm. per week on one, two or three consecutive days. When the proper dose has been determined for the individual, it is kept at this level since there is no habit formation. In occasional cases apparently permanent cures result. They cite one such in which the erythrocytes remained normal without phenylhydrazine for eighteen months.

Treatment of Tuberculous Hemoptysis. — Courcoux followed up the observations of Ravina, Benzaquen and Bibas on the effect of subcutaneous injection of oxygen on stopping pulmonary hemorrhage. He systematically injected oxygen subcutaneously in thirty-four cases of hemoptysis. The technic was simple and consisted in the rather rapid subcutaneous injection (usually in the thorax) of a considerable quantity of oxygen. The volume injected varied between 300 and 600 cc., but better results were obtained with the larger quantities as a rule. Repeated injections were without bad effects. In twenty-five cases the arrest of hemoptysis was immediate and definite. In six cases several repeated injections on consecutive days were necessary to obtain a good result. In seven cases the hemoptysis continued apparently unaffected. No other therapeutic procedures were used. The author does not speculate on the mechanism involved.

Riforma Medica, Naples

50: 1073-1108 (July 14) 1934

Aneurysm of Pulmonary Artery: Case. U. Borghetti.—p. 1075.
*Behavior of Cholesterolemia in Surgical Diseases of Infancy. V. Bernabeo.—p. 1080.

Cholesterolemia in Surgical Diseases of Infancy.—Bernabeo determined the amount of cholesterol in the blood of infants before and after surgical intervention. He found that the cholesterolemia showed a marked increase two hours after ether anesthesia and operation in children having surgical lesions. This increase lasted twenty-four hours and then gave way to an appreciable decrease. By the fifth day the cholesterol had diminished to its rate before operation. Children subjected to longer and more traumatizing operations showed a lower rate of cholesterolemia five days after operation than before. In septic surgical lesions no rise in cholesterolemia was observed before operation, except in cases of long duration, such as osteomyelitis and tuberculous lymphoma of the neck. In septic surgical lesions twenty-four hours after operation there was a slight hypercholesterolemia, which rose steadily for five days. This was partly attributable to the fall of the fever of the patients. After ten days the rate returned to normal. Children having surgical lesions but not evincing need of surgical intervention showed a higher rate of cholesterolemia than previous groups. The cholesterolemia decreased by the fifth day only to rise after the tenth and then to return to normal by the twentieth day. On the basis of these investigations the author concludes that all surgical lesions of infancy (traumatic, infective and suppurative) show a hypercholesterolemia, whether they are operated on or treated by other than surgical intervention.

50: 1109-1148 (July 21) 1934

Physiopathologic Clinical Classification of Dyspnea. G. Lami.—p. 1111.
*Rapid Cantani Test in Syphilis. A. Versari.—p. 1116.
Variations in Reticulocytes in Cancerous Patients After Roentgen Treatment. R. Lombardi.—p. 1122.
Pneumothoracentesis in Treatment of Exudative Pleurisy. G. La Torre. —p. 1136.

Rapid Cantani Test in Syphilis.—Versari states that three reagents are necessary for making the Cantani test. Reagent A consists of 56 Gm. of powdered ox heart, 300 cc. of 95 per cent ethyl alcohol, 150 cc. of 99.2 per cent ethyl alcohol and 2.5 Gm. of cholesterol; reagent B consists of 20 Gm. of egg lecithin, 370 cc. of 95 per cent ethyl alcohol and 3.75 cc. of pure phenol; reagent C consists of 225 cc. of 95 per cent ethyl alcohol, 25 cc. of pure phenol and 0.1 cc. of a 5 per cent solution of petrolatum in benzine. One part of reagent A, one part of reagent B and 0.5 part of reagent C are placed in a tube with two parts of a 3 per cent solution of sodium chloride. The suspension obtained is turbid and tends to accumulate on the surface. It is shaken for seven minutes before using. In the meantime, eight times the original amount of sodium chloride solution is put in another tube and after seven minutes the contents of the second tube are poured into the first tube and thoroughly mixed. Twenty-five hundredths cubic centimeters of the mixture is poured into the tubes (generally five) containing the serum to be examined; the tubes are shaken at the rate of from 150 to 200 times per minute for four minutes, then left at rest for two minutes, and 2 cc. of an 0.85 per cent solution of sodium chloride is added to each tube. Results are read immediately and again after from fifteen to twenty minutes. Negative serums show opalescence without flocculation; positive serums, clear flocculation; strongly positive serums, heavy flocculation with clarification of the liquid. The author found that in secondary syphilis with external manifestations the reaction is always positive compared with the Wassermann and Müller reactions. The Cantani test shows less positivity than the other reactions in cases of primary syphilis, of tertiary syphilis with latent or obscure manifestations, treated or not treated, and of nervous and congenital syphilis. In patients free from syphilis but presenting various acute or chronic diseases the Cantani reaction was always negative, whereas the Wassermann reaction gave 0.7 per cent nonspecific positive results and Müller's reaction 2.83 per cent. The Cantani reaction like the other tests always showed negative results in healthy persons. The author observed that the reaction had an index of specific sensitivity amounting to 52.38 per cent, while the Wassermann had 75.49 per cent and the Müller 80.02 per cent.

Archivos de Neurobiologia, Madrid

13: 563-1221 (July-Dec.) 1934

Neuronism or Reticularism. S. Ramón y Cajal.—p. 579.
Introduction to Psychopathology of Mystic Experiences. J. Goyanes. —p. 647.
Two Neurosurgical Cases. R. Bueno.—p. 701.
Death and Sexuality. J. G. Riera.—p. 723.
Serologic Reactions of Syphilis and Infantile Abnormality. C. Juarros. —p. 749.
*New Albuminoid Reaction of Superposition in Cerebrospinal Fluid. M. Górriz and P. Martinez.—p. 761.

Albuminoid Reaction of Superposition in Cerebrospinal Fluid.—Górriz and Martínez present the following technic: Two cubic centimeters of the reagent, consisting of 8 Gm. of corrosive mercuric chloride, 1 Gm. of sodium chloride, 2 Gm. of trichloracetic acid, 20 cc. of a 40 per cent solution of formaldehyde, 10 cc. of petroleum ether and 170 cc. of water is placed in hemolysis tubes of 100 by 10 mm. The corrosive mercuric chloride must be dissolved by heat, after which the sodium chloride is added. The remaining products are added in the order indicated, and the liquids when the mixture is already cold. Afterward it is filtered. The reagent keeps for months without protection from light. If after some time a slight precipitate is formed at the bottom, the solution is filtered again without losing any of its coagulating power. Two cubic centimeters of the reagent is carefully deposited in the bottom of the hemolysis tube and, on top of it, the cerebrospinal fluid so as not to produce a mixture of the two fluids. If there is a large amount of cerebrospinal fluid, 1 cc. may be used, and if less, 0.5 cc. is sufficient. In a few minutes a white ring of precipitated albumin forms at the zone of contact, increasing in size and showing its maximum in fifteen minutes. The use of the water bath shortens the time of the reaction. After about thirty minutes, or sooner if the fluid is normal and the reaction negative, the precipitation of the albumin coagulated in the ring begins in the form of fine granulations, which slowly fall to the bottom. The highly positive reactions were characterized by a flocculent veil, which took form after fifteen minutes and dropped to the bottom of the tube in about ninety minutes. When a large amount of albumin is present, the veil grows into a heavy mass, which is immediately precipitated to the bottom. The reaction is sensitive and simple. All fluids from normal subjects showed a negative reaction. In pathologic cases involv-

ing neurologic or psychic processes the test always evinced the greatest sensitivity to the slightest alterations in the amount of albumin or globulin. The reactions were generally positive in cases of schizophrenia, epilepsy and alcoholism.

Klinische Wochenschrift, Berlin

13: 1073-1104 (July 28) 1934

To What Extent Is Occurrence of Histamine in Organism Established? H. Burchard.—p. 1073.
Heredity and Environment in Tuberculosis. S. Peller.—p. 1076.
*Pregnancy Reaction According to Kapeller-Adler. Ohligmacher.—p. 1078.
*Influence of Administration of Copper on Experimental Hyperthyroidism in Human Subjects. H. E. Meyer.—p. 1079.
*Liver Therapy in Granulocytopenia. B. von Bonsdorff.—p. 1079.
Synergistic Behavior of Vitamins B and D and Their Combined Influence on Blood Chemistry. H. J. Jusatz and F. Wenzel.—p. 1082.
Attempts to Improve Therapeutic Action of Antitoxic Serums. W. Scholz and H. Schmidt.—p. 1084.
Nature and Technic of Cystodiaphanoscopy. E. Klaften.—p. 1086.
Chemistry of Muscles and Insulin. S. Grzycki.—p. 1089.

Pregnancy Reaction According to Kapeller-Adler.—Ohligmacher studied the pregnancy reaction that was first described by Kapeller-Adler (abstract in THE JOURNAL, April 14, p. 1265). He found that the color shades indicating a reaction are not distinct and that they fade into one another so that in some cases differentiation of a positive and negative test is impossible. His studies were made on 237 specimens of urine. Of the 145 specimens from nonpregnant persons, 128 gave negative reactions, 10 gave positive ones and 7 gave doubtful ones. Among 76 pregnant women the reaction was positive in 44, doubtful in 2 and negative in 30. During the puerperium, 13 women gave negative and 3 positive reactions. Since the incorrect results were especially frequent during the early stages of pregnancy (11 negative and 13 positive), the author concludes that the reaction is of no value for the diagnosis of pregnancy. He admits that the reaction may be reliable for the detection of histidine in the urine, but histidine elimination is not a constant symptom of the beginning stages of pregnancy.

Influence of Copper on Experimental Hyperthyroidism.—Meyer points out that Hesse was able to counteract thyroxine poisoning in dogs by means of the administration of copper. In mice, copper effected only a partial protection against thyroxine poisoning and in rabbits this detoxicating action of copper failed completely. These results, differing in the various species of animals, induced Meyer to investigate what effect the administration of copper has on thyroxine poisoning in human subjects. In four tests on himself, in the course of which copper and thyroxine were administered simultaneously, the behavior of the basal metabolism, of the pulse frequency, of the weight and of the serum lipase was watched. It was found that the oral administration of copper does not counteract the characteristic action of orally or intravenously administered thyroxine. The serum lipase of a human subject shows a considerable reduction following administration of thyroxine, and this reduction is noticeable also in case of the simultaneous administration of copper.

Liver Therapy in Granulocytopenia.—Von Bonsdorff describes two cases of granulocytopenia (agranulocytosis), in which the parenteral (intramuscular) administration of liver extract proved helpful. Both cases were so severe that their spontaneous cure must be considered highly improbable. In discussing the action mechanism of this treatment, the author points out that, if liver treatment is employed in pernicious anemia, the leukopenia characteristic for this disease is also favorably influenced, a process which indicates that the liver extract influences the leukopoietic apparatus. Moreover, the regeneration of the erythrocytes is often impaired in agranulocytopenia. The author points out that the literature reports nothing about the behavior of the reticulocytes in granulocytopenia. He assumes that a disturbance in the regeneration of the erythrocytes could be demonstrated much more frequently if the reticulocytes should be counted. In the two cases observed by him, the increase in the leukocyte values concurred with the reticulocytosis, a factor indicating a relation between leukopoiesis and erythropoiesis. Since observations on the two reported cases indicate that parenteral liver therapy is helpful in granulocytopenia, the author advises the trial of this treatment on a larger material.

Medizinische Klinik, Berlin

30: 985-1016 (July 27) 1934. Partial Index

Pathology of Heredity and Surgery. A. Ritter.—p. 985.
*Causes of Secretion of Mammary Glands During and Outside of Pregnancy. E. W. Winter.—p. 990.
*Differential Diagnosis of Basophile Adenoma of Hypophysis. C. V. Medvei and P. Wermer.—p. 992.
Roentgen Therapy of Chronic Tonsillitis and of Hyperplastic Tonsils During Childhood. K. Hundemer.—p. 994.
*Does Gargling Accomplish Its Purpose? T. von Liebermann.—p. 995.

Causes of Mammary Secretion.—Winter's investigations are concerned with the mammary secretion in general and not only with the lactation setting in after delivery. He calls attention to the mammary secretion occasionally setting in during amenorrhea or during phantom pregnancy. Observations in cases of phantom pregnancy indicate the importance of nervous factors. In summarizing his discussion the author states that a modification of the mammary function can be accomplished by the various hormones as well as by nervous factors, and, in view of the close relation between vitamins and hormones, he assumes that vitamins likewise may play a part. In the establishment of the mammary secretion proper, however, the products of the anterior lobe of the hypophysis seem to be of primary importance. The hormone of the anterior hypophysis, the sympathetic nervous system and the ovarian hormone form an inseparable unit. The author aimed to show that the changes taking place in mammary secretion are not produced by a single hormone but that a number of factors are necessary to produce them. He emphasizes that animal experiments and clinical observations must go hand in hand if a clear insight is to be gained into these processes.

Diagnosis of Basophile Adenoma of Hypophysis.—Medvei and Wermer, after commenting favorably on Cushing's paper on hypophyseal basophilism, describe briefly the most characteristic symptoms: obesity, skeletal changes, red striae particularly on the obese portions of the body, redness of the face, hypertrichosis that is noticeable particularly in the female patients, and dryness of the skin. Clinical examination often reveals high arterial pressure and diabetes mellitus. The function of the gonads is nearly always impaired: in women there exist oligomenorrhea and amenorrhea, and in men the potency is impaired. The authors show that many of the symptoms observed in hypophyseal basophilism occur also in patients with tumor of the suprarenal cortex and in certain ovarian tumors that lead to changes in the sexual characteristics (granulosa cell tumors and arrhenoblastomas). The differentiation of these conditions may therefore present difficulties. In the differentiation between hypophyseal basophilism and tumors of the suprarenal cortex, changes in the external female genitalia may be helpful, for in case of tumor of the suprarenal cortex the genitalia often show a decided tendency to virilization, sometimes to the extent of a pseudohermaphrodism, while in hypophyseal basophilism there are no such changes in the external genitalia. The red striae and the skeletal changes, particularly osteoporosis, which are characteristic for hypophyseal basophilism, have been observed also in case of tumor of the suprarenal cortex, in which they seem to be the exception rather than the rule. In the aforementioned ovarian tumors obesity and diabetes mellitus are extremely rare, while hypertrichosis is much more pronounced than is the case in hypophyseal basophilism. The virilization reaches a high degree in these ovarian tumors and as a rule these gonadal tumors are palpable.

Does Gargling Accomplish Its Purpose?—Von Liebermann says that some investigators charge that gargles are superfluous because the fluid does not reach the posterior wall of the pharynx but only up to the line formed by the posterior rim of the soft palate. The author points out that his studies on gargling do not entirely agree with the criticism of gargling voiced by Zimányi and others. Zimányi's experiments have value in that they call attention to the inadequacy of superficial gargling and the desirability of gargling in such a manner that the fluid is almost swallowed and is prevented from entering the stomach only by the outstreaming air. Children should be treated with gargles only in exceptional cases. Gargles are also effective in loosening the mucus and thus facilitate its expectoration.

Münchener medizinische Wochenschrift, Munich

81: 1119-1156 (July 27) 1934. Partial Index

Roentgen Therapy of Skin Diseases. F. Bering.—p. 1119.
*Prevention of Eclampsia. H. Siedentopf.—p. 1122.
*Leukemoid Crisis-Like Form of Remission of Pernicious Anemia Treated with Liver. J. T. Brugsch and H. Naegelsbach.—p. 1125.
Spontaneous Hypoglycemia. K. Wotzka.—p. 1127.

Prevention of Eclampsia.—Siedentopf emphasizes the significance of antepartum care in the prevention of eclampsia. He shows that regular examinations during pregnancy, particularly the control of the blood pressure and the watching for cerebral symptoms, make possible the early discovery of the women endangered by eclampsia. Conservative treatment as carried out by him consists in rest in bed, limitation of the fluid intake and a salt-free diet. In severe cases the patient receives only fruit for several days or the woman undergoes treatment by means of hunger or thirst. To facilitate the elimination of edema, magnesium sulphate is prescribed occasionally. If active treatment is resorted to, delivery is induced or accelerated. The author found that conservative treatment was effective in only slightly more than half of the cases in which it was employed. In the other cases, active treatment had to be resorted to on account of a threatening exacerbation of the symptoms. It was observed also that the conservative treatment influenced the various symptoms differently. The influence on the edemas was unusually favorable, for they nearly always disappeared rapidly. The renal symptoms reacted less promptly and the influence on the blood pressure was still more unreliable. The author rejects as unjustified the assertion that in active therapy the infant mortality is higher, for his own observations disclosed that the infant mortality was higher only when other complications existed, such as a narrow pelvis, heart disease and premature detachment of the placenta. He concludes that if in women with preeclampsia a trial with conservative measures proves unsuccessful, active treatment should be instituted.

Leukemoid Form of Remission of Pernicious Anemia.—Brugsch and Naegelsbach report the clinical history of a woman, aged 67, in whom a leukemoid blood crisis developed in the course of a pernicious anemia that had been subjected to liver therapy. A severe erythroblastic crisis and leukocytosis developed. The myelogenous leukocytes, up to the promyelocytes, showed toxic granulation and other pathologic changes. Myeloblasts likewise were observed. This appearance of pathologic leukocytes, together with the increase in reticulocytes, with the normoblastic crisis and with the further increase in the enlarged erythrocytes in the peripheral blood, is interpreted as a sort of cleansing of the bone marrow with maturation and elimination of diseased blood elements, and consequently a process of restoration. In this process of restoration, the bone marrow and the reticulo-endothelial system proved quantitatively inadequate for the maturation, denucleation and destruction of the diseased cells, and for this reason some of them were eliminated in the immature state. The authors call attention to the fact that these manifestations are of short duration and have a favorable prognosis, for, if liver therapy is continued, they soon terminate with the appearance of normally granulated leukocytes and of erythrocytes of normal size.

Wiener klinische Wochenschrift, Vienna

47: 929-960 (July 27) 1934. Partial Index

Anachoretic Manifestations in Inflammatory Processes. A. Ascoli.—p. 929.
Recent Results in Research on Sex Hormones. A. Butenandt.—p. 934.
*Clinical and Experimental Experiences with Short Wave Therapy of Brain. L. Horn, O. Kauders and P. Liebesny.—p. 936.
Experiences with Löwenstein's Method for Culture of Tubercle Bacilli. H. H. Kalbfleisch and Elisabeth Kalbfleisch.—p. 939.
*Experiences with Injection Treatment of Hemorrhoids. H. Henninger.—p. 941.
Injury of Urinary Apparatus in Surgical Interventions on Colon and Rectum. A. Lerch.—p. 943.
*Coincidence of Peptic Ulcer and Skin Diseases, Also a Contribution to the Pathogenesis of Ulcer. G. Bergman.—p. 945.
Necessity of Prophylaxis of Rickets During First Year of Life. W. Lesigang.—p. 948.

Short Wave Therapy of Brain.—Horn and his associates relate observations on ten schizophrenic patients who were subjected to short wave therapy of the brain, studies on the brains of rabbits that were subjected to treatment with short waves, and the results of histologic examinations of the brains of two patients with dementia paralytica, who had died eight and ten months after short wave therapy had been applied to their brains. The authors observed deep changes in the brain and its meninges. They admit that the clinical results of short wave therapy are still unsatisfactory in patients with schizophrenia as well as in those with dementia paralytica, but they do not deny that another dosage, perhaps irradiations at greater intervals, may eventually produce more favorable results. They emphasize that the rules laid down by Liebesny for short wave therapy must be given attention. Liebesny maintains that, in order to obtain a uniform depth action, the condenser plates should be from 6 to 10 cm. away from the head and not 1 or 2 cm., as was the case in most of the experiments. This rule must be followed to influence the deeper portions of the brain. Moreover, an increase in the temperature of the brain should be avoided. This may be possible by reducing the dosage.

Injection Treatment of Hemorrhoids.—Two or three days before the injection treatment, Henninger gives a laxative, and on the evening and morning preceding the injection an enema and sitz bath are given. After careful cleansing with corrosive mercuric chloride, a 20 per cent solution of cocaine is applied as a surface anesthetic and left for from ten to fifteen minutes. Then, following renewed cleansing with corrosive mercuric chloride, the suction bell is applied to the hemorrhoids and injection is done while the patient is in the knee-elbow position. Injection is begun on the innermost row of hemorrhoids and then proceeds to the more outward ones. Up to eight nodules can be obliterated in one session. For injection into the subcutaneous nodules, into nodules that have undergone a change of some kind and into ordinary prolapses of the mucous membrane, the author recommends a dextrose-glycerin solution; for injection into nodules that are covered with mucous membrane, he recommends the same solution or the solution with an addition of 4 per cent quinine lactate. The prescription for the dextrose-glycerin solution reads: dextrose 20 parts, bidistilled glycerin (plus 10 per cent distilled water) sufficient to make 100. The one with the quinine addition reads the same except that quinine lactate 4 parts is added. It is best to use a 5 cc. syringe and a needle 1 mm. in thickness and beveled at the tip. After injection the nodules are replaced with the aid of gauze to which petrolatum has been applied. Then the patient rests for fifteen minutes, is given 15 drops of tincture of opium and is told to take from 10 to 15 drops of tincture of opium three times daily on the following day or two, to avoid defecation. To prevent prolapse of the injected nodules, the patient on the day of the treatment should avoid sitting. On the day following the injection the patient is usually able to work. The first defecation is generally painless. During the first week defecation should be followed by a sitz bath and the application of a petrolatum preparation. It is necessary to reexamine the patient on the fourth or sixth day to avoid postinfectious necrosis. If all precautions are taken, the incidence of this complication, which is practically the only one, can be reduced to less than 1 per cent. The permanent results of this treatment are favorable. The author discusses the indications for the injection treatment. If prolapse of the mucous membrane is caused by prolapsed hemorrhoids, injection counteracts it; but in case of a large prolapse, injection is usually ineffective. Injection is contraindicated in case of acute inflammation of a nodule and also in prolonged incarcerations, but, if incarceration can be counteracted before the skin or mucous membrane has undergone severe changes, injection can be done after a day or two. The injection is most effective in case of bleeding nodules and also in chronically inflamed nodules.

Peptic Ulcer and Skin Diseases.—Bergman says that gastric ulcer is not a local disorder but the manifestation of a systemic disease. Studies in 100 cases convinced him that itching skin diseases are a frequent occurrence in patients with ulcers of the stomach or the intestine. The predisposition to "catarrhs," which characterizes the mucous membranes of patients with vasoneurosis and thus also of the ulcer patients, involves likewise the skin of these patients. In calling attention to a certain parallelism between changes on the external and internal (gastro-intestinal tract) body surfaces the author

suggests the possibility of a similarity between ulcer gastritis and certain skin diseases. He shows that, if the gastritis of ulcer is considered an "entodermatosis," several obscure factors in the pathogenesis of ulcer become clearer.

Zentralblatt für Gynäkologie, Leipzig

58: 1745-1808 (July 28) 1934

Permanent Results of Sturmdorf's Method for Plastic Repair of Uterine Cervix. L. Waldeyer.—p. 1746.
Slide Rule for Calculation of Date of Delivery. A Gengenbach.—p. 1753.
*Ammonia in Eclampsia. J. B. Llusia.—p. 1754.
Rheumatic-Neuritic-Neuralgic-Sympathetic Syndrome. M. Rodecurt.—p. 1771.
New Methods of Trichomonas Therapy. A. Hochloff.—p. 1775.
Experiences with Belladonna Suppositories in Obstetrics. O. Weinstock.—p. 1776.

Ammonia in Eclampsia.—Llusia states that pregnancy is characterized by a slight hyperammonemia, which is more pronounced in preeclampsia and still more in eclampsia and is greatest during the convulsions. The uremia is reduced to the same extent as the ammonia is increased, so that the quotient ammonia-urea is greater. After delivery the ammonia content decreases and the urea content increases to normal values. In cases of puerperal eclampsia, however, these values do not change until after the attacks of convulsions cease. The cause of the hyperammonemia is the functional inadequacy of the liver, but there is evidently no renal retention of ammonia. Pregnancy is characterized by a slight hyperacidity, which increases during preeclampsia and eclampsia. The mother substance of ammonia is decreased during preeclampsia and eclampsia, so that the potential ammonia values are smaller and nearly all the ammonia exists in the actual state. A considerable portion of ammonia enters the fetal circulation and is changed by the fetus into urea. The placenta does not take part in the ammonia regulation of the fetal circulation, and in the ammonia formation it seems likewise of no significance. In view of the degree of concentration of the ammonia in the blood as well as in the cerebrospinal fluid, which exists during the eclamptic convulsions, it may be assumed that the toxic action of the ammonia is responsible for the convulsions. The other symptoms of eclampsia, however, seem to have no connection with the quantities of ammonia.

Finska Läkaresällskapets Handlingar, Helsingfors

76: 587-684 (July) 1934

*Lymphogranulomatosis: Clinical Observations. E. Adlercreutz.—p. 587.

Lymphogranulomatosis.—Adlercreutz reports thirty cases (seventeen in men and thirteen in women) of histologically examined lymphogranulomatosis treated from 1915 to 1933. Tuberculosis was present in five cases. In twenty cases the onset of the disorder was indicated by swelling of the lymph nodes, in seven the swelling seems to have appeared in a later stage, and in three the lymphoma was not observed by the patient before admission. Pruritus occurred in nine cases and pigmentation of the skin in six. Two cases presented marked symptoms from the spinal cord. There were abdominal pain and diarrhea in eleven, enlarged abdominal lymph nodes in six, splenomegaly in nineteen and hepatomegaly in seventeen. Before the beginning of treatment on admission, the red blood picture was normal in six cases; there was slight anemia in nineteen and grave hypochromatic anemia in five. The sedimentation reaction, done in nineteen cases, showed increased values, often marked. Leukocytosis, usually moderate, was found in nineteen cases, neutrophilia in twenty, eosinophilia in only one and monocytosis in two. Lymphopenia appeared in twenty-four cases. The lymphogranulomatosis cases are classified on the basis of temperature into cases showing slow, relatively "benign" progression and cases showing rapid, more malignant development. Thirteen of these cases, mostly in older persons, presented an afebrile or subfebrile course, and seventeen, mainly in younger persons, greatly increased temperature, usually of Pel-Ebstein type, the "cardinal symptoms" of the disease being more often represented in the second group The total duration of the disorder in eighteen cases showed a maximum of eight years in one instance; only four patients lived more than three years. Complications were frequent. Certain diagnosis can be made only on histologic examination of excised material. Roentgen treatment was given in all but one case. The anemia was seldom affected by the therapy; the total number of leukocytes was reduced after each series of irradiations, but only slight changes resulted in the relative frequency of the different white blood elements.

Hospitalstidende, Copenhagen

77: 821-832 (July 10) 1934

*II. Experimental Investigations on Effect of Corpus Luteum Extract on Mammae of Infantile Guinea-Pigs. E. Dahl-Iversen.—p. 821.

Effect of Corpus Luteum Extract on Mammae of Infantile Guinea-Pigs.—Dahl-Iversen found that, in infantile uncastrated female guinea-pigs, corpus luteum extract produces a physiologic growth of the mammary glands, which is, however, slight in comparison to that caused by estrogenic substance under similar conditions. The secretion noted in the glandular tubes after the administration of corpus luteum extract, as after the administration of estrogenic substance, is thought possibly to depend on an admixture of estrogenic substance in the corpus luteum extract.

Norsk Magasin for Lægevidenskapen, Oslo

95: 905-1000 (Aug.) 1934

*Acute Polyarthritis. K. Motzfeldt.—p. 905.
Excessive Emphysema with Fatal Spontaneous Pneumothorax. J. D. Arntzen.—p. 919.
Auricular Fibrillation After Exposure to Electric Current. J. D. Arntzen.—p. 922.
Cleidocranial Dysostosis. O. K. Evensen.—p. 926.
Spontaneous Rupture of Aorta. O. K. Evensen.—p. 934.
*The Heart in Diabetes. A. Klingenberg.—p. 940.
Experiences with Cultivation of Tubercle Bacilli on Hohn's Substrate. P. M. Holst.—p. 958.
Traumatic Lesion of the Brain. G. H. Monrad-Krohn.—p. 961.
Results of Treatment of Fractures of Lower Extremities in Indherred Hospital. L. E. Volodarsky.—p. 967.
Histologic Observations in Tubal Pregnancy. A. Kristoff.—p. 971.
*Second Attack of Poliomyelitis After Twenty-Four Years. M. Tesdal.—p. 978.

Acute Polyarthritis.—Motzfeldt found that, of 10,000 patients treated in the medical division of Aker Hospital from 1924 to 1933, 615 had rheumatic diseases; 140 of these, or 1.4 per cent of the entire number, suffered from rheumatic fever. There was a history of previous rheumatic fever in forty-eight cases, or 34 per cent. Complicating recent endocarditis was found in twenty-two, or 15.7 per cent. Pericarditis occurred only four times and was responsible for the only fatal case. The author states that in sixty-two cases there was a direct, undoubted connection between tonsillitis and the rheumatic fever, in ten the disorder followed a catarrhal infection without tonsillitis, and in about half of the cases the rheumatic fever was primary. Six patients had previously been tonsillectomized. Control of all cases by the sedimentation reaction was introduced in 1926. In 80 per cent of the ninety-three patients treated since then the sedimentation reaction was more than 50; frequently a sedimentation reaction of more than 100 was seen in patients with normal rectal temperature. With normal sedimentation values rheumatic fever may with certainty be excluded. Since 1926 the hospital stay has been lengthened to an average of nine weeks instead of six, as formerly. Rest in bed until all signs of activity have disappeared is regarded as the most important part of the treatment. In most cases salicylate is given, the daily dose as a rule not exceeding 5 Gm. No specific action is ascribed to salicylates.

The Heart in Diabetes.—Electrographic studies in fifty-five diabetic cases treated during the last two years showed normal electrograms in only twelve. During treatment of the diabetes, fourteen readings became normal and six approached the normal. Of ten patients admitted in diabetic coma, only one had a normal electrocardiogram. Klingenberg concludes that in diabetes with pathologic metabolism definite signs of myocardiopathy are often seen, and the best therapy of the diabetic heart is treatment of the diabetes.

Second Attack of Poliomyelitis After Twenty-Four Years.—Tesdal says that the first attack, at the age of 14, resulted in paralysis of the lower extremities; the second, at 40, was followed by paralysis of the arms. The diagnosis was each time supported by the typical course and the results of examination of the spinal fluid and was verified by a neurologist. Twelve certain cases of second poliomyelitis infection have been reported in the literature.

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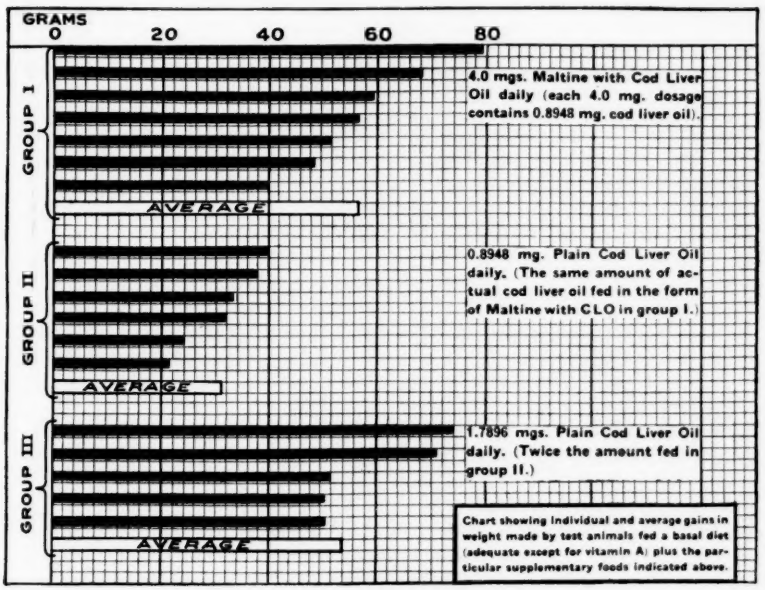
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SECOND: No third party must be permitted to come between the patient and his physician in any medical relation. All responsibility for the character of medical service must be borne by the profession.

THIRD: Patients must have absolute freedom to choose a legally qualified Doctor of Medicine who will serve them from among all those qualified to practice and who are willing to give service.

FOURTH: The method of giving the service must retain a permanent, confidential relation between the patient and a "family physician." This relation must be the fundamental and dominating feature of any system.

FIFTH: All medical phases of all institutions involved in the medical service should be under professional control, it being understood that hospital service and medical service should be considered separately. These institutions are but expansions of the equipment of the physician. He is the only one whom the laws of all nations recognize as competent to use them in the delivery of service. The medical profession alone can determine the adequacy and character of such institutions. Their value depends on their operation according to medical standards.

SIXTH: However the cost of medical service may be distributed, the immediate cost should be borne by the patient, if able to pay, at the time the service is rendered.

SEVENTH: Medical service must have no connection with any cash benefits.

EIGHTH: Any form of medical service should include within its scope all qualified physicians of the locality covered by its operation who wish to give service under the conditions established.

NINTH: Systems for the relief of low income classes should be limited strictly to those below the "comfort level" standard of incomes.

TENTH: There should be no restrictions by non-medical groups on treatment or prescribing unless formulated and enforced by the organized medical profession.

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